ecember 1945

Chemical Industries

IN THIS ISSUE

The New Threat of Increased Costs . . . 1049
Technical Intelligence 1053
New Techniques Speed TNT Production . . . 1054
Nicotinic Acid 1057
CHEMICAL MARKET DATA SOURCES . . . 1058
Steel Band Bracing . . 1062
Finding Chemical Facts 1064
Flameproofing Agents 1069
Marketing Chemical Specialties 1071

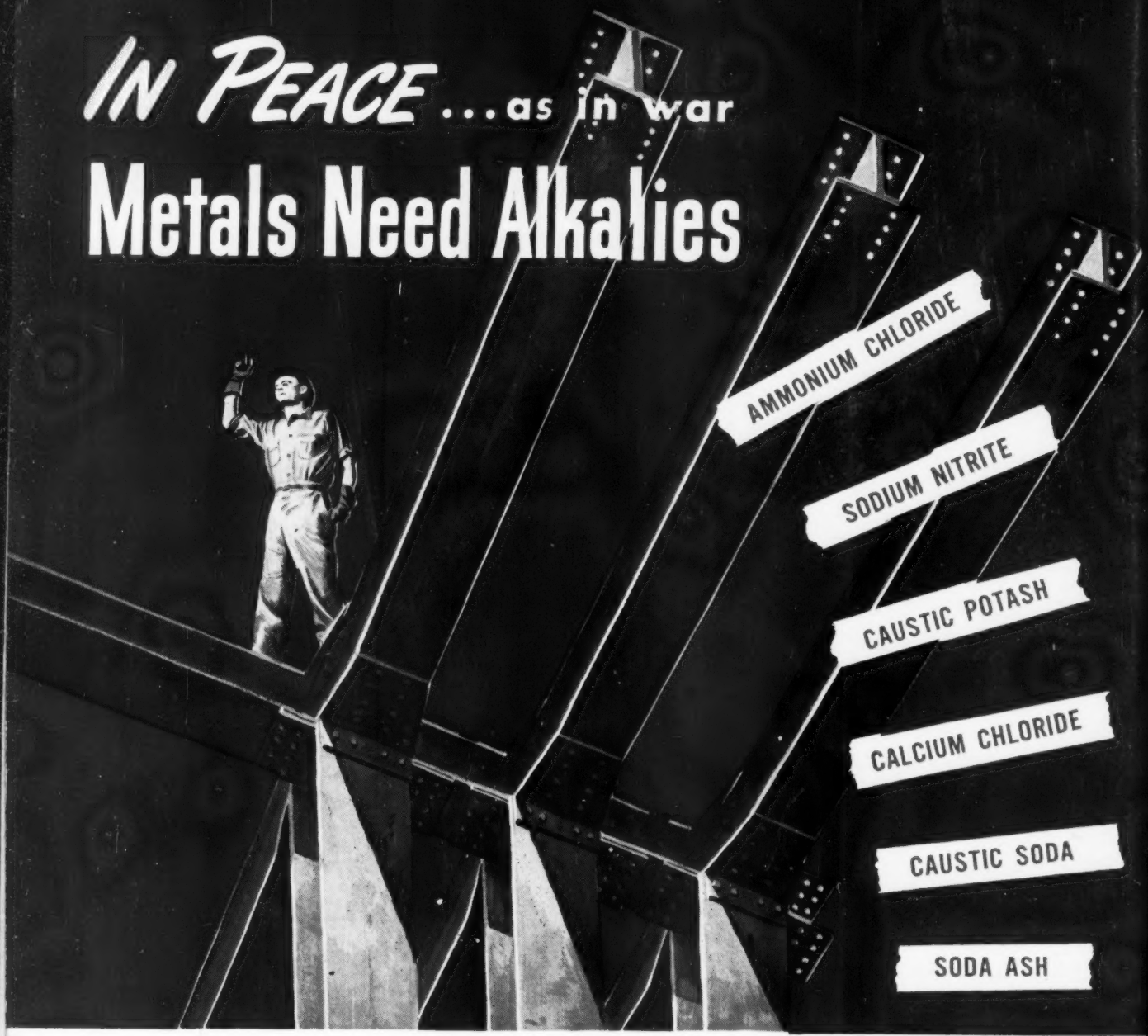


TNT—Now the acid is added to the oil.

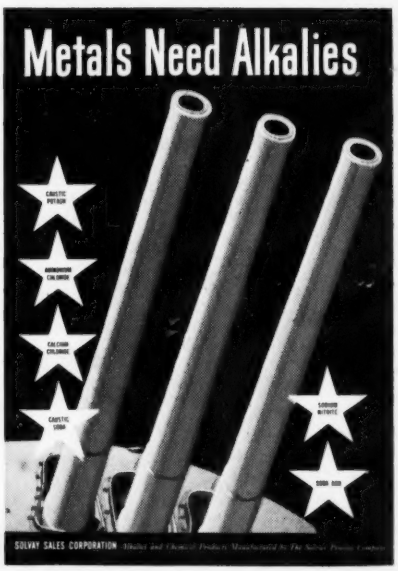
Meeting the New Threat of Increased Costs p. 1049

IN PEACE...as in war

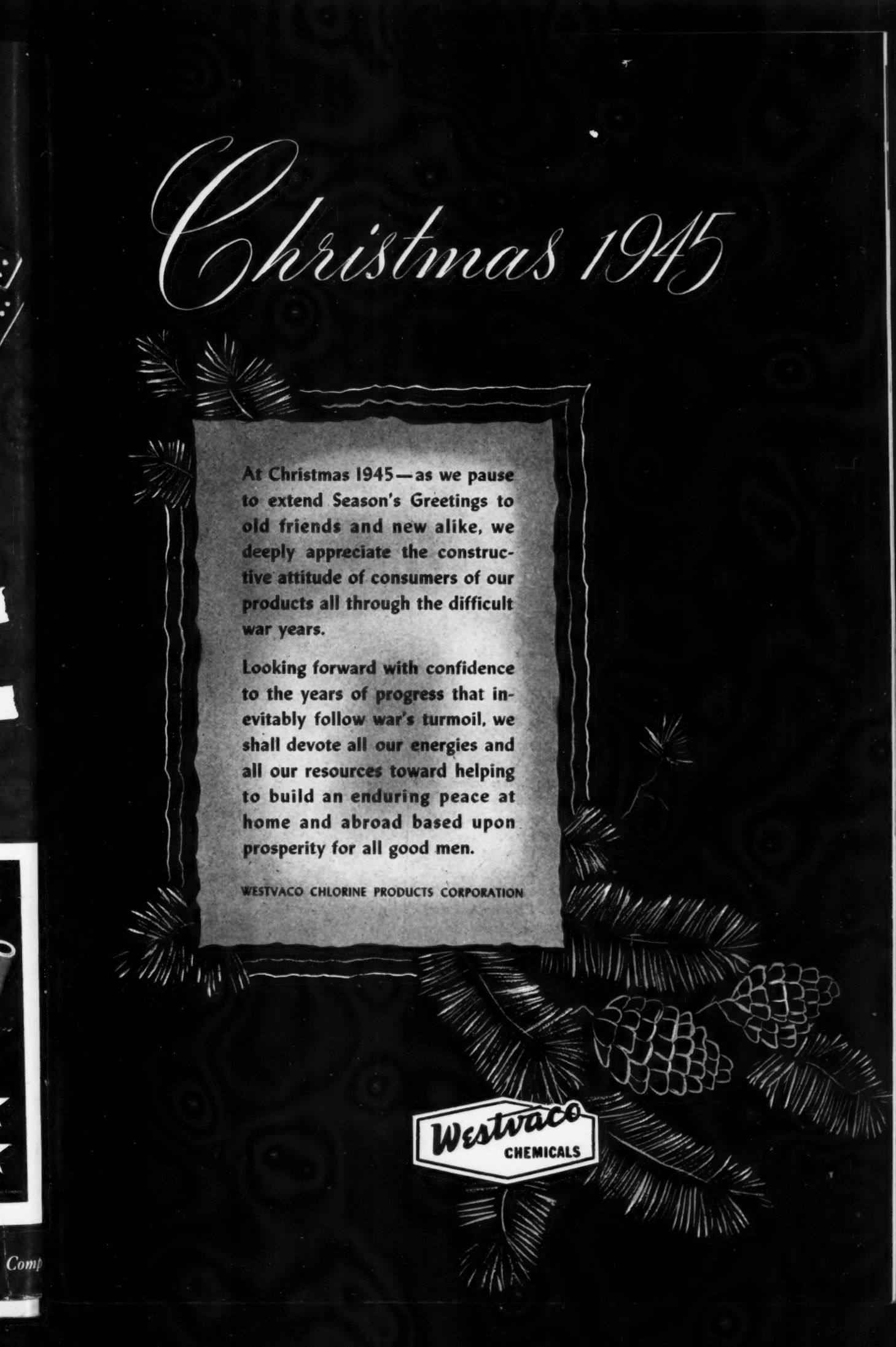
Metals Need Alkalies



New lightweight, high-strength aluminum . . . new steel alloys with extra qualities of heat-resistance, non-corrosion . . . From the new light metals to the ferrous and non-ferrous, metals serve peacetime America in numerous forms for a wide range of uses. Vital to metals are alkalies and related products, proving that in peace as in war alkalies are indispensable!



SOLVAY SALES CORPORATION *Alkalies and Chemical Products Manufactured by The Solvay Process Comp*


Christmas 1945
At Christmas 1945—as we pause to extend Season's Greetings to old friends and new alike, we deeply appreciate the constructive attitude of consumers of our products all through the difficult war years.
Looking forward with confidence to the years of progress that inevitably follow war's turmoil, we shall devote all our energies and all our resources toward helping to build an enduring peace at home and abroad based upon prosperity for all good men.
WESTVACO CHLORINE PRODUCTS CORPORATION
Westvaco
CHEMICALS


PURE SHELLAC
TO MAKE IT SELL • TO MAKE IT SELL • TO MAKE IT SELL •

THE CHEMICAL BUSINESS MAGAZINE

Chemical Industries

VOLUME 57
NUMBER 7

December 1945 Contents

EDITORIALS 1045
THE NEW THREAT OF INCREASED COSTS by Roland P. Soule 1049
TECHNICAL INVESTIGATION IN WORLD WAR II by D. B. Keyes 1053
NEW TECHNIQUES IMPROVE TNT MANUFACTURE by Philip J. Raifsnider 1054
NICOTINIC ACID Editorial Staff Report 1057
INFORMATION SOURCES FOR CHEMICAL MARKET RESEARCH by R. M. Lawrence 1058
COMPRESSION EVAPORATOR 1061
CAR BRACING WITH STEEL BANDS by T. Pat Callahan 1062
FINDING FACTS FOR A CHEMICAL CLIENTELE by I. M. Strieby and B. J. Cole 1064
FLAMEPROOFING AGENTS FOR TEXTILES, PAPER AND WOOD by R. G. Fordyce 1069
MARKETING OF CHEMICAL SPECIALTIES by Edward Despres 1071

PUBLICATION STAFF
Editor
ROBERT L. TAYLOR
Chemical Editor
HOWARD C. E. JOHNSON
Engineering Editor
HERMAN W. ZABEL
Assistant Editor
MARTHA NEWTON
Contributing Editors
T. P. CALLAHAN
W. A. JORDAN
T. N. SANDIFER
Production Manager
E. MARY TROW

CONSULTING EDITORS
ROBERT T. BALDWIN
L. W. BASS
BENJAMIN T. BROOKS
J. V. N. DORR
CHARLES R. DOWNS
ROBERT J. MOORE
ERNEST W. REID
NORMAN A. SHEPARD

BUSINESS STAFF
Advertising Manager
L. CHARLES TODARO
New York
STEPHEN GARDNER
Chicago
FRANK C. MAHNKE, JR.
Los Angeles
DON HARWAY
Research & Promotion
ROBERT H. BALDWIN
Circulation Manager
FLORENCE SANDERS

DEPARTMENTS

ABOUT THE AUTHORS 988
BETWEEN THE LINES: Refractory Magnesia Outlook 1078
NEW PRODUCTS AND PROCESSES 1082
NEW EQUIPMENT 1094
PACKAGING AND SHIPPING 1106
PLANT OPERATIONS NOTEBOOK 1112
LABORATORY NOTEBOOK 1114
INDUSTRY'S BOOKSHELF 1116
BOOKLETS AND CATALOGS 1118
CHEMICAL ECONOMICS AND STATISTICS 1141
PATENTS AND TRADEMARKS 1161

NEWS OF THE MONTH

WASHINGTON 991
CHEMICAL NEWS IN PICTURES 1073
GENERAL NEWS 1123
CHEMICAL SPECIALTIES NEWS 1132
CANADIAN NEWS 1136
MARKETS IN REVIEW 1146
CURRENT PRICES 1148

INDEX TO ADVERTISERS 1158

Published monthly, except twice in November, at 1309 Noble St., Philadelphia 23, Pa., and entered as 2nd class matter July 15, 1944, at the Post Office at Philadelphia 4, Pa., under the Act of March 3, 1879. Subscription $4 a year, $6 for two years. Add $2 per year for postage to foreign countries other than Canada and Latin America. Single copies 50c, except November. Canadian subscriptions and remittances may be sent in Canadian funds to Chemical Industries, P. O. Box 100, Terminal A, Toronto, Canada. Copyrighted 1945, by MACLEAN-HUNTER Publishing Corporation, 522 Fifth Avenue, New York 18, N. Y., Murray Hill 2-7888; Horace T. Hunter, President; John R. Thompson, Vice-President and Treasurer; J. L. Frazier, Secretary. Office of Publication: 1309 Noble Street, Philadelphia 23, Pa.

EDITORIAL & EXECUTIVE OFFICES: 522 FIFTH AVE., NEW YORK 18, Murray Hill 2-7888. DISTRICT OFFICES: Chicago: 309 West Jackson Boulevard, Chicago 6, Ill., Harrison 7890. Los Angeles: 916 West Fifth Street, Los Angeles 13, Calif., Mutual 8512. San Francisco: 1105 Russ Bldg., San Francisco 4, Calif., Yukon 1069. London: 57 Goldsmith Avenue, Acton, London W3.

HARDESTY PLASTICIZERS GIVE YOU

1. LOW TEMPERATURE FLEXIBILITY
2. HIGHEST PLASTICIZING POWER
3. HIGH SOLVENCY AND
4. WIDE COMPATIBILITY

WHEN USED WITH

Vinyl Copolymers
Polyvinyl Chloride
Polyvinyl Butyral
Nitro-Cellulose
Cellulose Acetobutyrate
Acrylic Resins and
Synthetic Rubbers

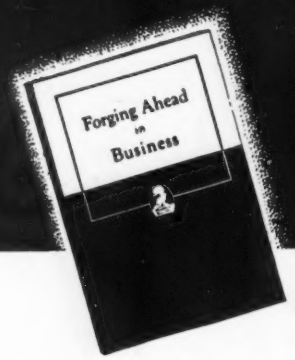
HARCHEM
PLASTICIZERS

Alkyl Roleates
Dibutyl Sebacate
Capryl Alcohol

HARDESTY
CHEMICAL CO., INC.
41 East Forty-second St., New York 17, N.Y.

FREE!

The famous 64-page, fact-packed book that has stimulated thousands of men!



"Forging Ahead in Business" is a practical, thoughtfully-written book with "punch" and common sense on every page. It carries a message of vital importance to every man who wants to make more money, get a better job and improve his station in life.

Partial Contents:

- Law of Success
- Forging a Career
- Organized Knowledge
- Highway of Achievement
- Making Decisions
- Failure and Success

Noted Contributors

Among the prominent men who have contributed to the Institute's training plan, which is described in "Forging Ahead in Business," are: Thomas J. Watson, President, International Business Machines Corp.; Clifton Slusser, Vice President, Goodyear Tire & Rubber Co.; Frederick W. Pickard, Vice President and Director, E. I. du Pont de Nemours & Co.

Simply return the coupon below, and your FREE copy of "Forging Ahead in Business" will be *mailed* to you.

MAIL COUPON TODAY

ALEXANDER HAMILTON INSTITUTE
Dept. 447, 71 W. 23rd St., New York 10, N. Y.
In Canada:
54 Wellington Street, West, Toronto 1, Ont.

Please mail me, without cost, a copy of the 64-page book—"FORGING AHEAD IN BUSINESS."

Name.....

Firm Name.....

Business Address.....

Position.....

Home Address.....

ABOUT THE AUTHORS

IRENE M. STRIEBY and BETTY JOY COLE, who collaborated in the writing of the article on page 1064, Finding Facts for a Chemical Clientele, head technical libraries for Eli Lilly & Co. and Calco Chemical Division, American Cyanamid Co., respectively. Mrs. Strieby brought to her position at Lilly's a varied experience that began with work as a chemistry laboratory assistant in college. Shortly after her husband's death in 1927 she became librarian of Riverside Military Academy, Gainesville, Georgia, and Hollywood, Florida, where her son was also in school. From there she went to the Universities of Wisconsin and North Carolina for further training. Mrs. Strieby, a member of several professional organizations, is on the C.E.D. Committee for Library Service. As for hobbies, they have, of necessity, changed with residence —swimming, ice boating and gardens have been superseded by genealogy, antique furniture, and picture buttons.



Prior to becoming a chemist in the research laboratories at Calco, Miss Cole taught chemistry for three years. She has her bachelor's and master's degrees from Sweet Briar and Columbia respectively. She took charge of the Calco library in 1931 and soon thereafter became associated with the activities of Special Libraries Association. Miss Cole has served S. L. A. in various capacities and, at the present time, is vice president and president-elect. Extra-curricular activities keep her so increasingly busy that she finds little time for her hobbies—books, flowers, and stamps.



DICK LAWRENCE, who writes in this issue on Information Sources for Chemical Market Research, page 1058, has been for the past 9 years a member of the development department staff of Atlas Powder Co. in Wilmington. He was previously with the Chemicals Division of the United States Tariff Commission where his duties involved the study of competition between imported and domestic chemicals.

Upon graduation from California in 1926, Dick spent several years with the Palmolive Soap Company, "enhancing the nation's school-girl complexions," as he puts it. In 1931 he got his M.S. (Ch.E.) at the University of Illinois, with the aid of a fellowship financed by utility connections of Samuel Insull. Dick said once that he hopes St. Peter marked this good deed on the credit side of Mr. Insull's ledger along with the Chicago Opera House.

One of Dick's "hobbies" is bringing prominent visitors to the Banks of the Brandywine as speakers for the many organizations in which he is active; such as the A. I. Ch. E., The Atlas Globe Club, the Kiwanis Club, and the Illini Club of Delaware. He also likes to collect postage stamps depicting persons and events connected with the history of the chemical industries and has presented framed scrolls of such stamps to his speakers. Another of his diversions is trying to stump the experts on "Information Please," and a set of The Junior Britannica testifies that he almost did it once.

P. J. RAIFSNIDER, author of New Technics Improve TNT Manufacture, page 1054, has spent the past four years working close to the manufacture of TNT, at the Plum Brook Ordnance Works, Trojan Powder Co. A graduate of the University of Wisconsin, Phil was a member of the "start up crew" that placed the various TNT lines in operation at Plum Brook. As process specialist he helped engineer various changes in the manufacturing process. He worked for a time as a TNT night superintendent and was most recently assistant TNT area supervisor. Phil wrote the TNT manual used at PBOW and authored part of the TNT operating instructions.



REID G. FORDYCE, author of Flame Proofing Agents for Textiles, Paper and Wood, page 1069, has been a research chemist at Monsanto Chemical Company's Central Research Laboratories since 1939. Born in Canada, Dr. Fordyce studied at the University of British Columbia and at McGill, where he received his Ph.D. His hobbies include chess, golf, music and armchair philosophy.

DONALD B. KEYES received his education at the University of New Hampshire, Columbia and the University of California. During the war he was Chief of the Chemical Industries Branch Office of Production Research and Development. Recently he was made a vice-president of Heyden Chemical Co.



Chromium

...ON SEA, ON LAND AND IN THE AIR!

The shiny chrome that adorns automobile bumpers is also a vital part of the engines driving ships and planes across land and sea.

Wherever there is friction there is wear. This is especially true in internal combustion engines of the gasoline and diesel types.

It has been found that aircraft engines fitted with chrome plated piston rings have a much longer life than when plain steel rings are used. Similarly in the case of diesel engines, greatly increased wear is obtained by plating the cylinder liners or the piston rings with porous chromium. The wear of cylinders may be reduced from four to twenty times and the ring wear about four times as a result of such treatment.

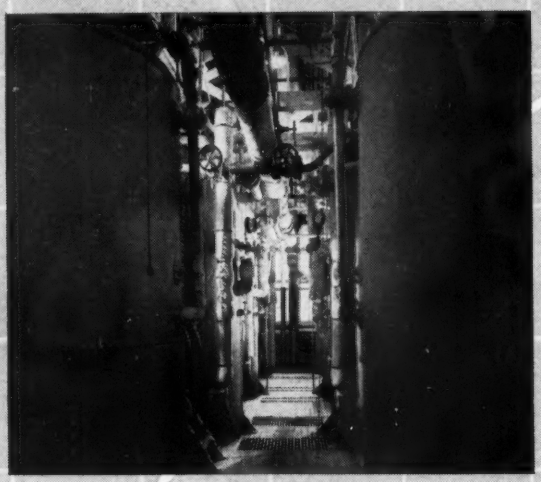
This is only one of the many modern applications of chromium chemicals undreamed of in 1845 when we built the first chromium chemical plant in America.

BICHROMATE OF POTASH • CHROMIC ACID • BICHROMATE OF SODA

MUTUAL CHEMICAL COMPANY OF AMERICA

270 MADISON AVENUE NEW YORK 16, N.Y.

Dowtherm on the job!



A long-term investment in dependable service

Nine years ago, this big food processing firm looked at a heating problem . . . thought of the future . . . and installed a Dowtherm unit. Their foresight has been paying them dividends ever since in dependable, accurate heating service.

This particular Dowtherm system is used for deodorizing vegetable oils at temperatures of 500° to 550° F. . . . a job well suited to Dowtherm's precise control and low pressure operating characteristics. The unit is gas fired, entirely automatic in operation. It has been a good investment. A recent letter from the superintendent of the plant tells of the steady and satisfactory service this installation is still giving after years of operation.

A record like this will be no surprise to hundreds of other satisfied Dowtherm users. Dowtherm vapor heating covers the range of processing temperatures from 300° to 725° F., with pressure requirements not exceeding 110 lbs. per sq. in. gauge. With its simplicity of operation, low maintenance requirements, and accuracy of control, it is handling difficult heating problems for many industries.

Dowtherm may bring speedier production, reduced upkeep costs, and greater product uniformity to your processing operations. Just drop a line to Dow for further information.



Dowtherm

The high-temperature low-pressure heat transfer medium

DOW
CHEMICALS
INDISPENSABLE TO INDUSTRY

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle

WASHINGTON

T. N. SANDIFER *reporting*

Technical Manpower . . . Surplus Chemical Plants . . . Rubber Program Surplus Disposal . . . Civilian Production Administration

Maybe No Draft for Technical Men

A SIGNIFICANT LINE in General George Marshall's report on the American war effort escaped wide notice. He said:

"To technological warfare we devoted 98 percent of our entire effort."

Further on, he added:

"The effect of technology on the military structure is identical to its effect on the national economy. Just as the automobile replaced the horse and made work for millions of Americans, the atomic explosives will require the service of millions of men if we are compelled to employ them in fighting our battles."

These observations are cited because they bear on the still continuing controversy over the place of the young technical man in a military conscription program. Is his place in the laboratory or in the fighting ranks?

Apparently the Army was never able to make up its mind during the war. Now, however, there appears to be a move toward shaping a policy which will insure at least a portion of young scientists flowing into industry from recognized educational institutions despite future draft demands. The outcome is not definite yet, but is optimistic in promise.

Other parts of the Chief of Staff's report, meanwhile, gave an impression of inconsistency with the above-mentioned reference to technological demands in war.

In almost his next sentence, he says, "However, technology does not eliminate the need for men in war."

But, later in his report, he is found pointing out, if not complaining, that the Germans had a great advantage in a smokeless, flashless powder which helped conceal their fire positions in both day and night fighting. American riflemen and battery gunners gave their positions away with either muzzle flashes or smoke puffs.

He blames attacks on munitions makers as "Merchants of Death" just prior to the war for retarding research in this country. Inferentially he has raised a question as to where the fault will lie if the nation lacks some other technical advantage in a future war, if, meanwhile, the same system of drafting school and college men almost indiscriminately persists.

Shortage of Skilled Workers

THE DEFICIENCY IN technically trained men is being further aggravated by a shortage of skilled workers.

Rep. John W. McCormack, Mass., recently recalled that the 1940 Census disclosed only about 5,000,000 skilled tradesmen in the country, of whom 5½ percent were over 65 years of age, less than 3 percent were beginners or apprentices, and a fourth had received their training in foreign lands before coming to this country.

We got through the war, he says, by diluting this skill—one skilled, all-around worker to three or more unskilled. "If we are to continue to enjoy the place America has held through the skill and ingenuity of its craftsmen, maintain our high standards of living, and safeguard our future security, we must take immediate steps to replenish our reservoir of skilled workmen."

Rubber Program Changes

THE REVISED RUBBER DIVISION, which will serve under CPA, has for a principal task fitting the synthetic production into the postwar industry in which a probable restoration of some natural rubber supply is a major factor.

An equally important assignment will be to aid reconversion of the industry and rubber-consuming industries, administering continuing controls, such as that over rosin, and others involved in production.

CPA Takes Over

SLATED TO PERFORM a rear-guard function for the now formally defunct WPB, the Civilian Production Administration, which assumed reconversion responsibilities left by WPB on November 3, appears likely to operate well into the coming year. Initially it was scheduled to go out of existence with the current year.

Already there are heard suggestions that perhaps the brakes were being removed too fast, and that it might be well to keep some organization intact to handle necessary remaining controls, and perhaps impose new ones until the situation stabilizes.

However, this move would be tied up in the proposed extension of the Second War Powers Act, which the President has asked Congress to approve. All of these war agencies legally derive from the Act or from orders issued under its authority.

Surplus Chemical Plants Causing Worry

THE SURPLUS PROPERTY BOARD has recommended to Congress that Government-owned chemical war plants be disposed of promptly in order to put available facilities into useful peacetime production and to avoid useless conservation and maintenance costs.

Warned perhaps by its experience so far in attempting to sell or lease surplus steel plants in its hands, the Board pointed out the difficulties involved in the case of the chemical installations.

"The unusual character of the buildings and their wide dispersal over large areas make most of these projects uneconomical for normal peacetime purposes," the Board reported.

The Government invested about $3,400,000,000 in 94 chemical plants, costing more than $5,000,000 each. Parenthetically, plants costing this amount can only be disposed of by the Board after 30 days' notice to Congress. In the case of the Government-owned steel plants, a Senate Committee called some brief and very discouraging hearings, from the Government standpoint, at which leading steel makers told why they were not greatly interested in taking these facilities over. Among their reasons were the huge reconversion costs, equal to the cost of a normal peacetime plant, the short time allowed by law for lease operations (5 years), and the uneconomical size; the Geneva steel plant, for instance, could overwhelm its ordinary market areas.

In the case of the chemical plants, 33

had been declared surplus as of September 1, and in these the Government's investment was less than $1,000,000 each, private capital representing the balance of the cost. The bulk of the total investment was in ammunition plants, 23 in all, and 10 synthetic ammonia plants, 2 alcohol plants, 4 toluene and 10 classed "miscellaneous chemicals."

The general recommendation is that such of these as are suitable for changeover to peace production be leased or sold to private operators, and the others not adaptable to this plan be dismantled. Movable structures, building materials, tools, other equipment and utilities would be salvaged or marketed as far as practicable.

In the case of ammunition assembling and loading plants, some of which have facilities for graining nitrate, the report urges immediate determination of the possibilities of integrating the ammonium nitrate facilities with Government-owned synthetic ammonia plants. Similar recommendations are made respecting sulfuric acid and nitric acid plants. In both categories surrounding land suitable for agriculture would be sold off.

To meet the Department of Agriculture recommendation for 250,000 tons of nitrogen annually, above TVA production, the report suggests that Government-owned synthetic ammonia plants be sold or leased as quickly as possible. To facilitate this change, the Government should pay for any necessary conversion costs, the report recommended.

Surplus Disposal Finds Heavy Going

INCLUDED IN MORE THAN $1¼ billion of surplus properties to the RFC during September were chemicals costing originally $7,530,000, the RFC has just reported.

During November there is scheduled to go on sale the largest offering yet made of surplus petroleum products, originally costing nearly $1,000,000, including lubricating oils, greases, naphthas, solvents, waxes, petroleum and petroleum products.

Also being sold this month, with bids up to November 30, is a quantity of surplus petroleum refining equipment and distillation apparatus.

However, general criticism of the disposal program so far points to a major overhaul of the law in the near future, from present indications at the Capitol.

Legislative Sidelights

A HOUSE COMMITTEE launched an investigation on October 22 into proposed changes in the Holding Company Act administered by SEC. Earlier, Chairman Lyle Boren, Okla., had circulated a questionnaire among holding company executives to get views on proposed changes.

One of these would liberalize the Act in respect to geographical limitations now imposed on holding company operations A number of limitations on SEC policy subsequently were suggested by witnesses before the committee, which has not reported yet.

THERE IS A RACE ON between departmental officials and Congressional interests in the matter of the ownership of off-shore gas and oil deposits, reported on here last month, with the Interior Department seeking court determination of the question before Congress can act on a bill giving the states the decision. The bill was strategically cornered by its opponents in a Senate committee at this writing.

HEARINGS WERE SCHEDULED to begin before a Senate committee in mid-November on disposal of the Government's two surplus pipelines, Big Inch and Little Inch, with probably a conflict of interests developing between natural gas operators who want to maintain foot-in-door rights to lease or operate the lines, and coal industry representatives, said to favor retention of the lines by the Government. Also, the War and Navy departments are understood to favor Government retention of the lines as a reserve measure. Interior Department is said to desire Government ownership of the lines.

NEW RESTRICTIONS on labor, particularly repeal of plant seizure provisions in present laws, have been launched in Congress, but have not reached a vote beyond committee stage.

SENATOR MCCARRAN, Nevada, has introduced S. 1522, to regulate disposition of accumulated Government-owned strategic and critical materials, including scarce metals and minerals—mercury, tungsten, lead, zinc and others. Senator Johnson, Colorado, has introduced S. 1481, amending the law on acquisition of stockpiles of critical or strategic materials of various kinds, to provide for further acquisitions.

THE SENATE HAS APPROVED the nomination of Dr. Edward U. Condon, of Pennsylvania, to be Director of the National Bureau of Standards.

U. S. Chlorine Plant Disposal Policy

THE SURPLUS PROPERTY ADMINISTRATION has announced that it proposes to take prompt steps to sell or lease by open negotiations any of the Government-built chlorine facilities as soon as they may be declared surplus, except as precluded by options or other agreements with operators.

The Adminstration foresees "considerable industrial interest" in operating some of the facilities. If it is not possible to sell or lease some of the complete plants, SPA contemplates prompt dismantlement and salvage of useful items.

BORAX
AND
BORIC ACID
TECHNICAL • U-S-P • SPECIAL QUALITY
CRYSTAL • GRANULATED • POWDERED
IMPALPABLE • ANHYDROUS

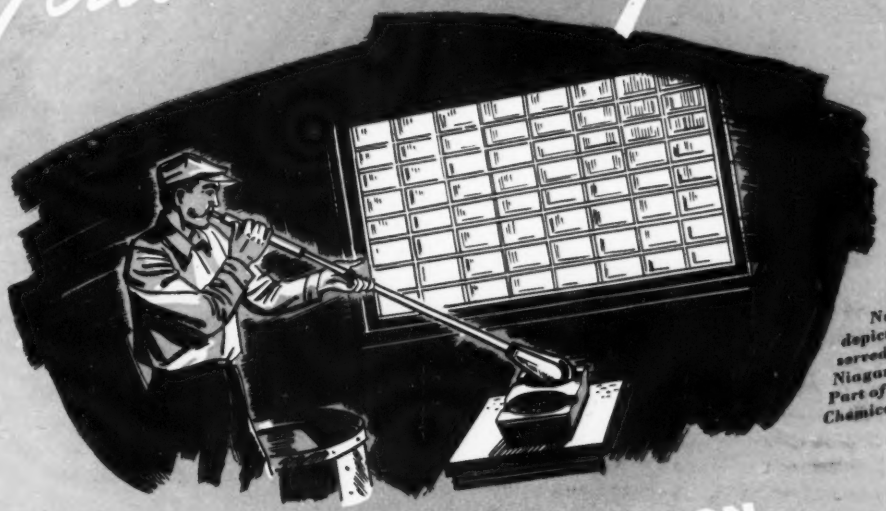
- Sodium Metaborate
- Potassium Borate
- Ammonium Biborate
- Ammonium Pentaborate

PACIFIC COAST BORAX COMPANY
51 MADISON AVENUE, NEW YORK 10, N. Y.
CHICAGO 16 • LOS ANGELES 14



ADVENTURES IN THE "MARGIN OF EXPERIENCE"

Glass Making—



Number 4 in a Series depicting the industries served by the products of Niagara... "An Essential Part of America's Great Chemical Enterprise".

AN INDUSTRY WITH IMAGINATION

During the past few years the glass industry has shown dramatically that new research and energetic product development can transform an ancient and seemingly "static" material into a brand new material with almost unlimited possibilities.

For example, in addition to its traditional applications, glass is now an important building material...a textile fibre for wearing apparel and fire resistant draperies and upholstery fabrics...an insulating material for home construction and electrical appliances...it has even been given elastic properties! Yet these are but a few of the many new uses and qualities of glass.

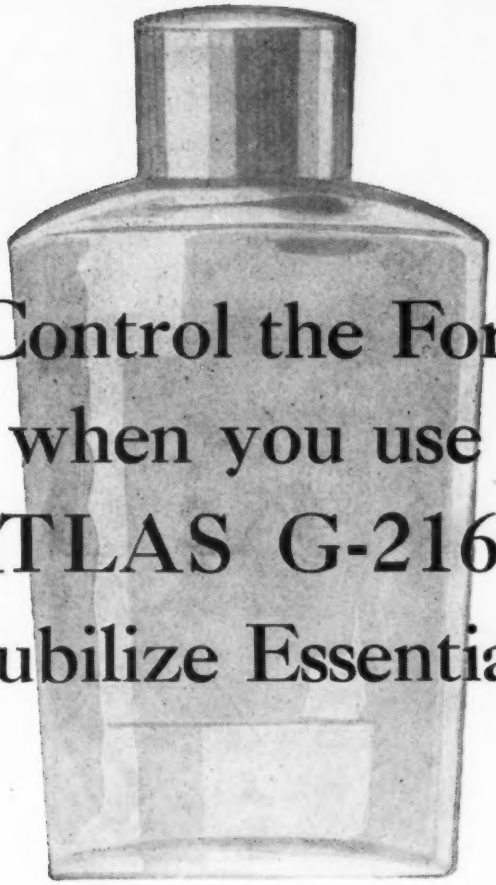
While research and product development did the *work*—it was the long and valuable experience gained through years of patient study and experimentation with glass that made such progress possible. As a source of supply for glass working materials, Niagara has helped to provide that "Margin of Experience" out of which the new developments have come.

An Essential Part of America's Great Chemical Enterprise

Niagara ALKALI COMPANY

60 EAST 42ND STREET, NEW YORK 17, N. Y.

Caustic Potash · Caustic Soda · Paradichlorobenzene
Carbonate of Potash · Liquid Chlorine · Niathal



You Control the Formula when you use ATLAS G-2160 to Solubilize Essential Oils

ATLAS G-2160 gives you a completely free hand in the formulation of essential and perfume oil solutions. *You* decide the exact proportions of oil and alcohol you want to use. *You* have absolute control.

In the past, it was often necessary to formulate soft drinks, flavors, perfumes, lotions and hair preparations with an undesirably high percentage of alcohol—just because it was impossible to get some difficultly soluble oil into solution any other way.

Now, with Atlas G-2160, you determine the exact proportions of oil and alcohol you *want* to use—then proceed to make clear solutions with Atlas G-2160 or with Atlas Tween 20, another solubilizing agent.

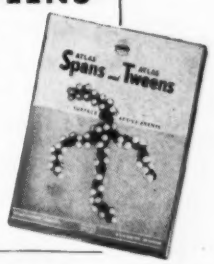
Freedom in formulating essential or perfume oil solutions is only one example of the great flexibility and versatility of Atlas surface active agents. Atlas Spans and Tweens are chemically complex materials that range from completely oil soluble to completely water soluble . . . that offer a wide choice in compatibilities . . . that offer new freedom in formulation with emulsifiers, detergents and wetting agents.

Literature and sample are yours for the asking. Begin by writing for a free copy of the 20-page booklet illustrated at the right.

ATLAS SPANS AND TWEENS

Atlas Spans constitute a series of technical long chain fatty acid partial esters of hexitol anhydrides. The hexitol anhydrides include sorbitans and sorbides, mannitans and mannides.

Atlas Tweens comprise a series of polyoxyalkylene derivatives of hexitol anhydride partial long chain fatty acid esters.



Spans and Tweens: Reg. U. S. Pat. Off.

ATLAS INDUSTRIAL CHEMICALS DEPARTMENT

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*



How SKILSAW Protects Equipment *"in-the-Package"*

Moisture "in-the-package" causes vast damage to precision equipment.

Skilsaw, Inc. prevents this damage by means of Jay Cee Silica Gel, the ideal drying agent. A few small bags of the Jay Cee Gel are included within tightly sealed packages of electric handsaws, drills, and other tools. The gel has amazing power to adsorb and hold moisture. Thus the air in the package is kept thoroughly dry and damage from rust or corrosion is avoided.

This practice is being followed by more and more manufacturers of metal products. The cost of the gel is a mere trifle in comparison with the possible damage from rust or corrosion.

Jay Cee Silica Gel has wide application in the Air Conditioning, Refrigeration, and Chemical industries. It is clear white; passes a rigid section test; meets exacting Government specifications; is strictly a quality product.



A few excellent Jay Cee Silica Gel sales territories are still open to jobbers. Write for details.

JOLIET CHEMICALS, LTD., INDUSTRY AVENUE, JOLIET, ILLINOIS

JAY CEE SILICA GEL

A superior dehydrant

Under the impetus of war...



X-ray looks into new fields!

How chemical exactness aids in the making of photographic emulsions for X-ray and other films.

During the war, mobile X-ray units moved right up to combat field hospitals, helping to expedite the care of wounded.

But medical aid was not the only duty for X-ray. The sharp, searching eye of X-ray looked over virtually all combat matériel used by American armed forces, from rifle bullets to steel plates for battleships! X-ray searched out defects, helped to assure uniform performance.

Yes . . . there are many new duties for X-ray film and for all kinds of photographic films.

This has naturally called for advanced techniques in the making of photographic emulsions for film.

In making photographic emulsions, manufacturers have to deal with many variables—time, temperature, rate of precipitation, agitation, washing, ripening, sensitizing substances, etc.

It *is* a delicate, painstaking job—and it *demands* fine chemicals of the highest purity *right at the beginning.* Infinitesimal amounts of chemical impurities can be responsible for important, and unwelcome, changes in speed and sensitivity of the film.

That's why the photographic industry relies upon Baker's *purity by the ton* in fine chemicals.

If you have a special requirement involving purity by the ton, we invite you to discuss your needs in confidence with Baker.

J. T. Baker Chemical Co., *Executive Offices and Plant:* Phillipsburg, N. J. *Branch Offices:* New York, Philadelphia and Chicago.

Baker's Chemicals

C. P. ANALYZED • FINE • INDUSTRIAL

8

Baker Chemicals for Photographic Emulsions

ACID HYDROCHLORIC
AMMONIUM BROMIDE
AMMONIUM HYDROXIDE
AMMONIUM IODIDE
POTASSIUM BROMIDE
POTASSIUM CHLORIDE
POTASSIUM IODIDE
SODIUM CHLORIDE

Baker's

BACK FROM THE WARS!



MORE MARBLEHEAD
Now Available
FOR CIVILIAN SERVICE

For the past five years, Marblehead High Calcium Chemical Lime has been an important factor in the manufacture of many vital war materials, such as explosives, steels, chemicals, leather, paper and box-board. The same high quality and purity required for the business of war is also essential for the business of peace.

Marblehead is *tunnel mined* from pure, virgin limestone quarries. This eliminates contamination and dirt from outside sources. Every step in the refining and manufacture of Marblehead High Calcium Lime is equally safeguarded under strict technical control.

The result is a fine, pure chemical product, high in calcium content and comparatively free from foreign matter. Put Marblehead's boundless energy to work! Use it for water softening and every industrial or chemical lime need.

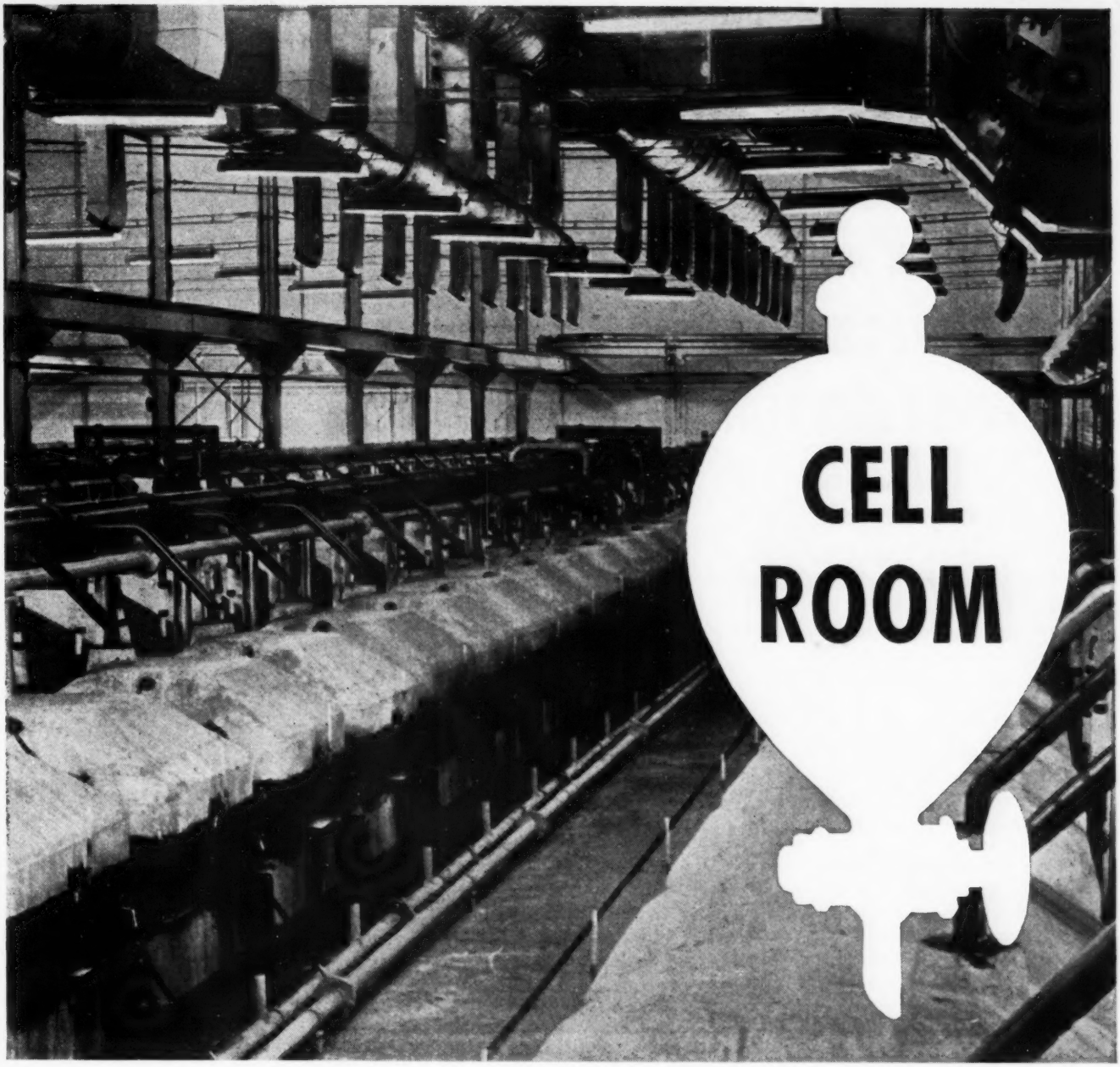
★ FOUR FORMS ★

TRY A CAR NOW IN YOUR OWN PLANT



MARBLEHEAD LIME CO.

160 N. LaSalle St. Chicago 1, Ill.



• *Cell room in a Chlorine plant of the Wyandotte Chemicals Corporation at Wyandotte, Michigan.*

WYANDOTTE CHEMICALS CORPORATION

ONE OF THE WORLD'S GREAT PRODUCERS OF CHEMICALS

SODA ASH
CAUSTIC SODA
BICARBONATE OF SODA
CALCIUM CARBONATE
CALCIUM CHLORIDE
CHLORINE
HYDROGEN
SODIUM ZINCATES
AROMATIC INTERMEDIATES
DRY ICE
Other Organic and
Inorganic Chemicals

WYANDOTTE CHEMICALS CORPORATION
MICHIGAN ALKALI DIVISION • WYANDOTTE, MICHIGAN

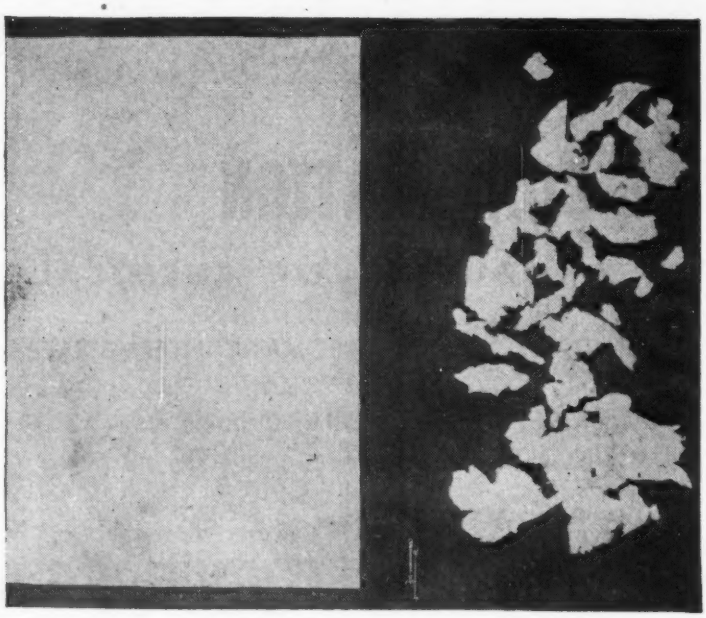
Wyandotte
REG. U. S. PAT. OFF.

LIFE On The

MANY NEW AND DIVERSIFIED USES STRESS IMPORTANCE OF THE FERRO AND FERRI CYANIDES

Yellow Prussiate of Soda (Sodium Ferrocyanide), and Yellow Prussiate of Potash (Potassium Ferrocyanide) are important raw materials in the manufacture of dry colors . . . iron blues and chrome greens . . . used as individual colors or for toning in the production of printing inks, surface coatings, carbon paper, floor coverings, crayon, etc. Soluble iron blues are used widely in coloring of paper. Both Sodium Ferrocyanide and Potassium Ferrocyanide are in large demand as oxygen carriers in the discharge printing of aniline blacks by the so-called prussiate method. They are also used as clarifiers in the production of tartaric and citric acids. Potassium Ferrocyanide is used in foundry practice and in case-hardening of steel files as well as for the coating of speed blue print paper. In the pharmaceutical field, Potassium Ferrocyanide is an important raw material used in the production of certain vitamins.

POTASSIUM SODIUM FERRICYANIDE, better known as REDSOL** CRYSTALS, an exclusive Cyanamid development to replace the wartime scarcity of Red Prussiate of Potash from abroad, has proven of immediate superiority. Principally used for coating blue print paper and in the processing of color picture film, also as a mild oxidizing agent, REDSOL CRYSTALS are more uniform, of higher purity, deliver more ferricyanide per unit, and are more readily soluble due to their fine crystalline form. Ferricyanide radical equivalent to 103.5% Potassium Ferricyanide. Complete details and technical counsel on applications of REDSOL CRYSTALS and the AERO* Brand Prussiates may be obtained by addressing Organic Chemicals Department, American Cyanamid and Chemical Corporation.

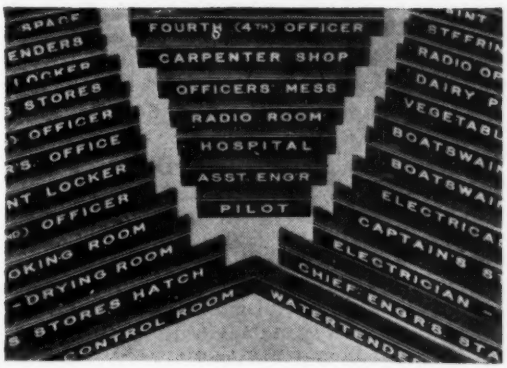


(*Left*) **RELATIVE WET STRENGTH OF MAP PAPER** bonded with melamine resins such as Cyanamid's PAREZ* 607 and similar paper without resin is shown in tests made by the Army Engineers and the National Bureau of Standards. These two papers were subjected to exactly the same treatment . . . soaked in distilled water for 24 hours, agitated gently for a few minutes, removed, the excess water squeezed out by hand. The resin treated sheet shown at left remained intact while untreated sheet at right disintegrated. In addition to improving wet strength of paper this melamine resin also increased dry tensile strength and folding endurance.

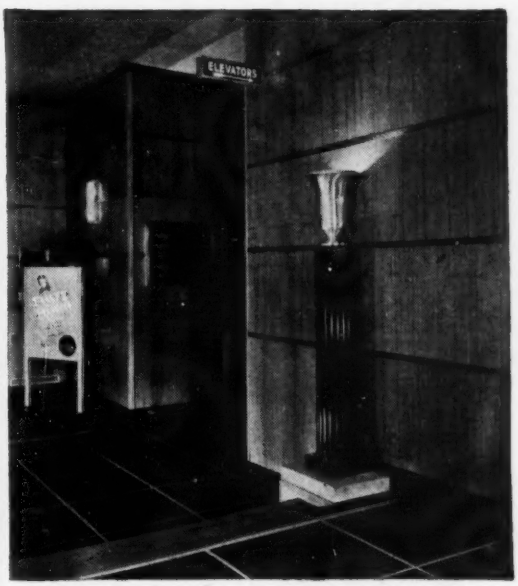
(*Below*) It is in modern paint mills such as this that iron blues and chrome greens are mixed with other pigments to provide a wide range of tonal values.

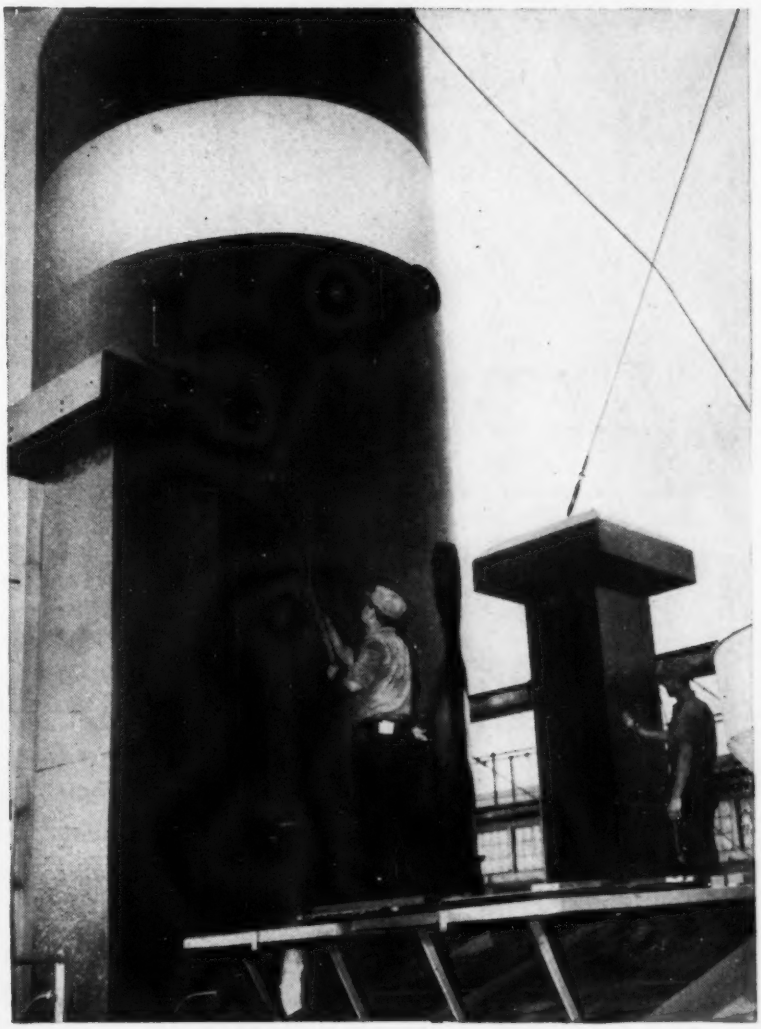


Chemical Newsfront



AS MELAMINE RESINS COME HOME FROM WAR many new architectural and decorative uses for plastic laminated sheets are being realized. Potential designs and colors are unlimited, and uses vary from wall, door, counter, and tabletop panels (see above), or other architectural facings, to fluorescent dials, wiring diagrams and nameplates (see below). Laminates made of paper impregnated with Cyanamid's MELMAC* laminating resins have extreme surface hardness, high heat resistance, good dielectric strength, color stability, and are non-inflammable. Since MELMAC resins are colorless, a great variety of color and design can be incorporated into the laminates as sheets are assembled for curing.





(*Above*) **ONE OF THE FIRST SHIPS TO SAIL IN PEACETIME COLORS** is the *Alden Besse*, merchant vessel of the Grace Line. Wartime gray disappeared behind the broad green, white, and black stripes of the funnel, black hull, and glistening white superstructure. Out of Cyanamid's war experience has come improved protective and decorative coatings which will be evident as the bright, familiar colors return to the world's seaports, highways and homes. Now, through the use of synthetic resins, such as Cyanamid's REZYL*, TEGLAC*, BEETLE*, MELMAC*, and PHENAC** resins, specialized finishes have been developed for the paint industry having greater permanency and durability at faster timing schedules for more economical production.

*Reg. U. S. Pat. Off. **Trade-Mark

American Cyanamid & Chemical Corporation

A Unit of American Cyanamid Company

30 ROCKEFELLER PLAZA · NEW YORK 20, N. Y.



MERCK VITAMINS

Thiamine Hydrochloride U.S.P.
(Vitamin B_1 Hydrochloride)

Riboflavin U.S.P.
(Vitamin B_2)

Niacin
(Nicotinic Acid U.S.P.)

Niacinamide
(Nicotinamide U.S.P.)

Pyridoxine Hydrochloride
(Vitamin B_6 Hydrochloride)

Calcium Pantothenate Dextrorotatory

Ascorbic Acid U.S.P.
(Vitamin C)

Vitamin K_1
(2-Methyl-3-Phytyl-1,4-Naphthoquinone)

Menadione U.S.P.
(2-Methyl-1,4-Naphthoquinone)
(Vitamin K Active)

Alpha-Tocopherol
(Vitamin E)

Alpha-Tocopherol Acetate

Biotin

Merck & Co., Inc. now manufactures all the vitamins commercially available in pure form, with the exception of vitamins A and D.

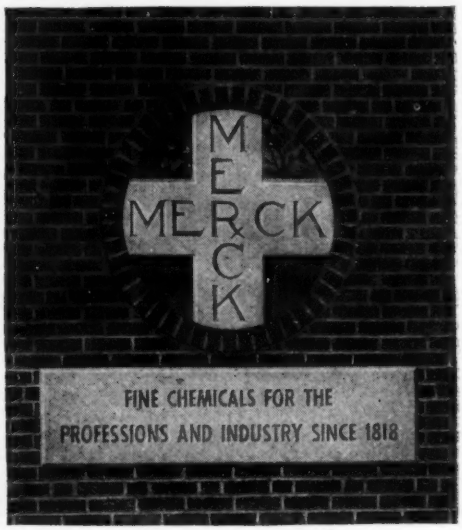
PURE VITAMINS

—products of Merck Research

Merck research has been directly responsible for many important contributions to the synthesis, development, and large-scale production of individual vitamin factors in pure form.

In a number of instances, the pure vitamins may be considered to be products of Merck research. Several were originally synthesized in the Merck Research Laboratories, and others have been synthesized by Merck chemists and collaborators in associated laboratories.

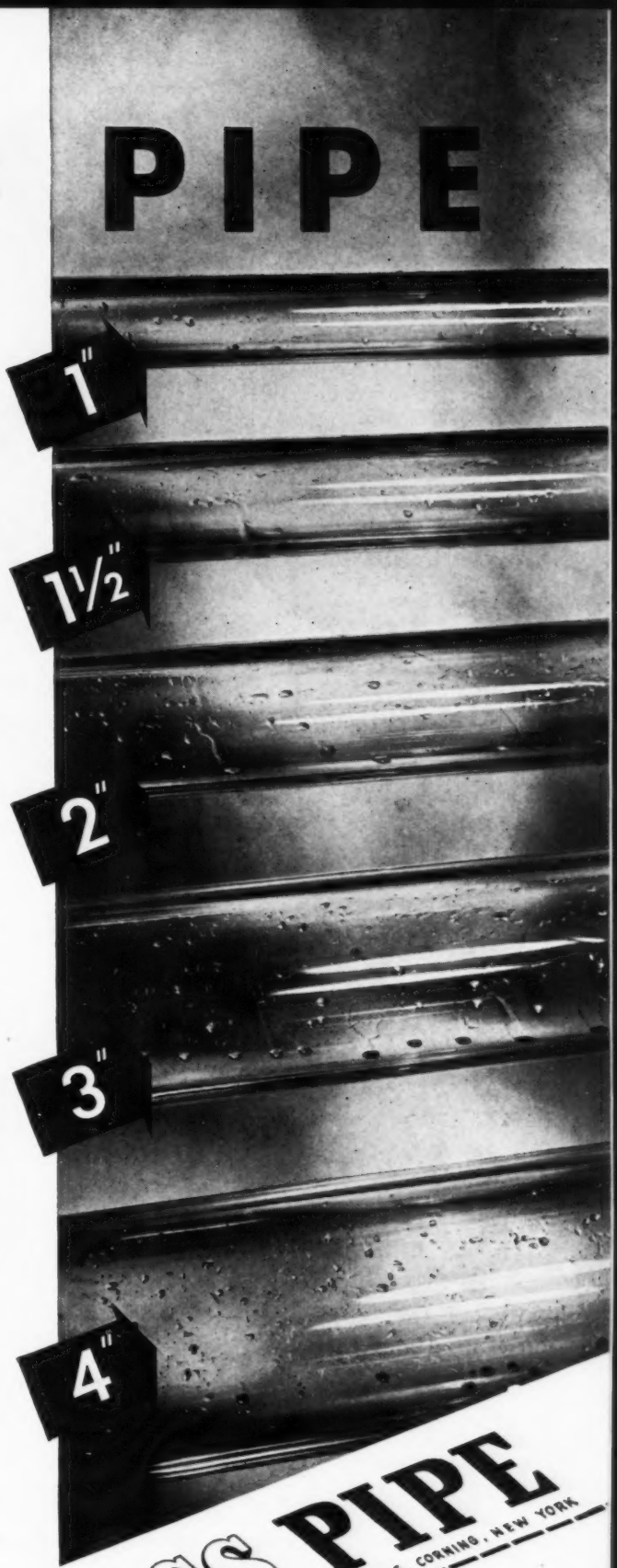
Because most of the known vitamins have now been made available in pure form, effective therapy of specific vitamin deficiencies can be conducted on a rational and controlled basis, under the direction of the physician.



MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

PYREX PIPE

and fittings are supplied in . . .



If your process pipe requirements can be taken care of by 4″ diameter pipe or smaller, you can have all of these advantages of PYREX Pipe.

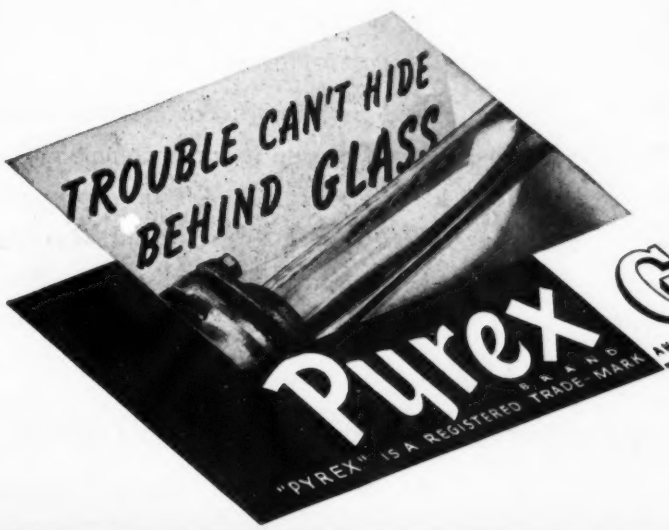
1. *Ruggedness* is proved by literally miles of PYREX Pipe that have been in actual plant service over a period of years.
2. *Transparency* of PYREX Pipe permits you to keep a visual check on your product as it is conveyed through the line.
3. *Corrosion resistance* of this special borosilicate glass gives PYREX Pipe a long life under acid conditions too severe for other materials.

In addition, PYREX Pipe withstands high temperatures and sudden changes in temperature. Also, because of the smooth hard surface, pressure drop in PYREX Pipe is appreciably less than in pipe lines of other materials.

All these features make PYREX Pipe an economical, practical material that can simplify your operating problems.

PYREX Pipe is stocked in all these diameters and in standard lengths of 10 feet. A stock of standard fittings and adaptors is also available. Where standard parts can be used, it will simplify your installation and stock maintenance. But where you prefer other lengths or special fittings, they can be easily furnished exactly to your specifications and with no excessive premium in cost. For full details write Industrial Sales Dept., CI 12

CORNING GLASS WORKS
CORNING, NEW YORK



GLASS PIPE

AND INDICATES MANUFACTURE BY CORNING GLASS WORKS, CORNING, NEW YORK

INDUSTRIAL SALES DEPT., CI 12
CORNING GLASS WORKS, CORNING, N. Y.

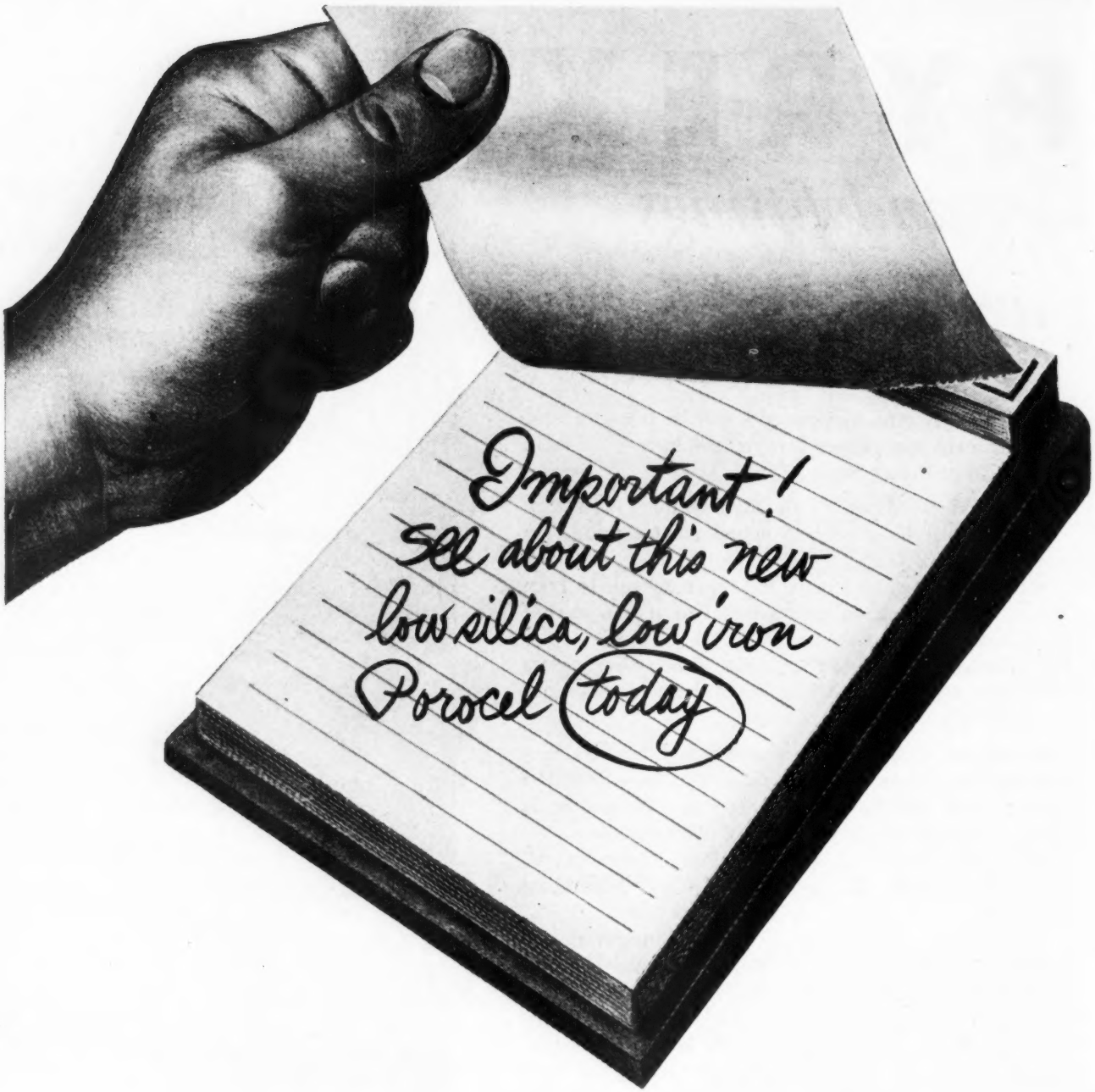
Please send me the following literature:

- ☐ PYREX Pipe Bulletin
- ☐ Installation Manual
- ☐ Adaptor Connections
- ☐ PYREX Valves

Name ..... Title .....

Firm .....

Address .....



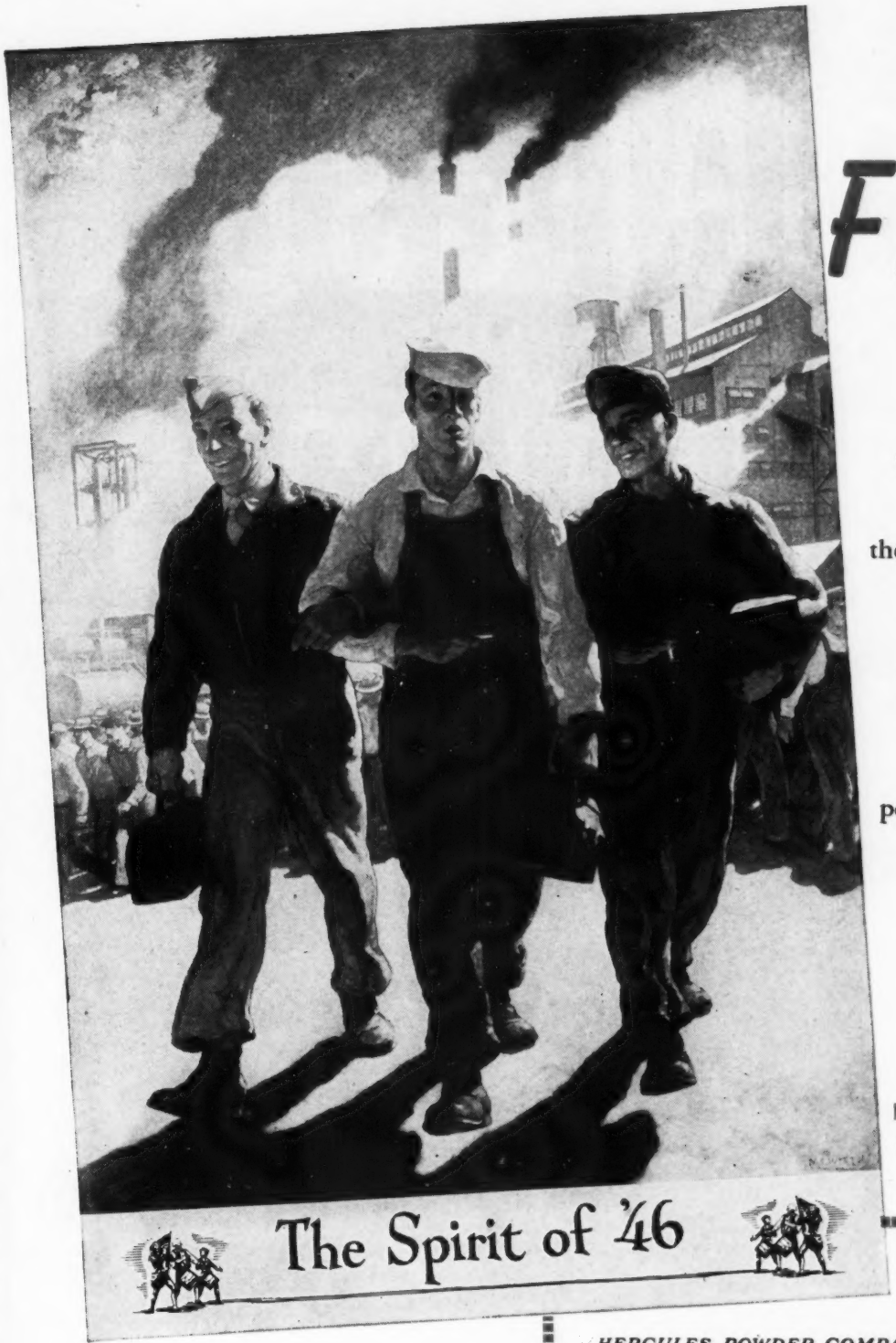
Porocel is being produced in a new grade that offers many advantages to the refiner or chemist who is looking for an adsorbent, catalyst, or catalyst carrier of high natural purity and low cost. The silica content of this new Porocel is unusually low and the iron content is at a minimum — features made possible by a special bauxite ore.

Freedom from these impurities gives the new grade twice or even three times the life of other types of Porocel when used in certain processes. As in other grades, the granules are uniform in size and hard enough to withstand many varied conditions of temperature and flow.

The improved performance of the new Porocel has already been proved in large commercial applications. It promises to be useful in any application where silica and iron may be troublesome. We shall be glad to send complete information. Write

ATTAPULGUS CLAY COMPANY (EXCLUSIVE SALES AGENT) • 260 SOUTH BROAD STREET, PHILADELPHIA 1, PENNSYLVANIA

POROCEL CORPORATION • BAUXITE ADSORBENTS AND CATALYSTS



FREE!

This beautiful, full-color poster, painted by the well-known illustrator, N. C. Wyeth, is yours for the asking. Printed on heavy paper, size 27½" x 43½", this attention-compelling poster is ideally suited for posting in industrial plants and offices.

RETURN COUPON FOR YOUR COPIES NOW!

HERCULES POWDER COMPANY INCORPORATED *992 Del. Tr. Bldg. Wilmington 99, Del.*

Please send me..... copies of your poster THE SPIRIT OF '46. I understand that this places me under no obligation whatsoever.

*Name*_____

*Title*_____

*Company*_____

*Street*_____

*City*_____

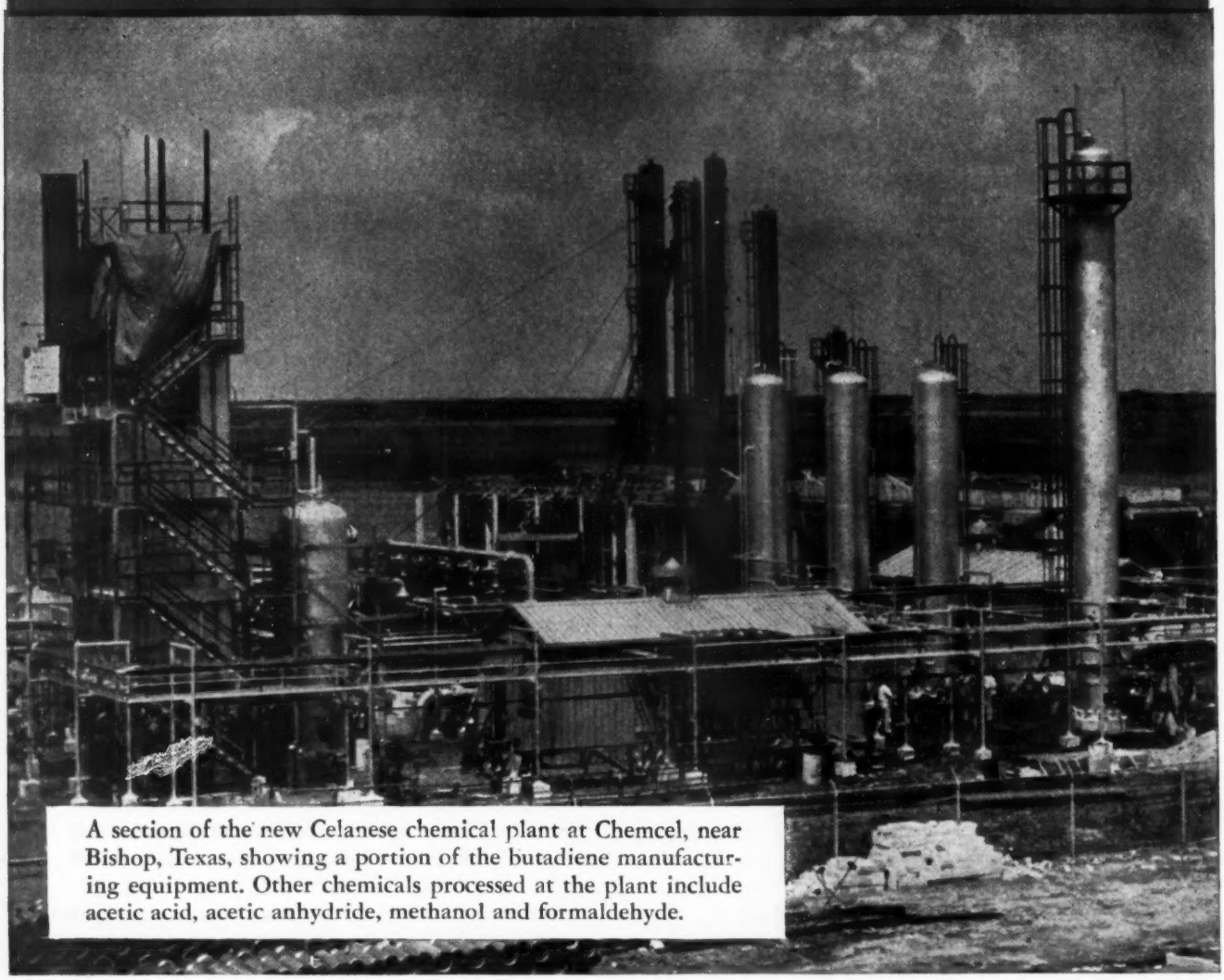
*Zone No.*_____ *State*_____

IN-223

HERCULES

CHEMICAL MATERIALS FOR INDUSTRY

Celanese Chemicals



A section of the new Celanese chemical plant at Chemcel, near Bishop, Texas, showing a portion of the butadiene manufacturing equipment. Other chemicals processed at the plant include acetic acid, acetic anhydride, methanol and formaldehyde.

CELANESE CORPORATION OF AMERICA

A BROADER BACKGROUND for Celanese Research

THE COMMISSIONING of the Celanese chemical plant near Bishop, Texas, marks an important step in the development program for the chemical division of Celanese Corporation.

Manufacture of a wide variety of basic chemicals has begun, including such versatile compounds as acetaldehyde, acetic acid, acetic anhydride, acetone, formaldehyde, methanol and butadiene.

Celanese research in the related fields of textiles, plastics and chemicals and the increasing industrial acceptance of synthetic compounds, underlies this program of expansion. An even broader application of Celanese research data to specific industrial problems will be possible when full production is achieved.

From the integrated program of *specific objective, research* and *practical application* the enlarged scope of Celanese activity and facilities promises greater service to industry. Celanese Chemical Corporation, division of Celanese Corporation of America, 180 Madison Avenue, New York 16, N. Y.

PLASTICIZERS
ORGANIC PHOSPHATES
LUBRICANT ADDITIVES
INTERMEDIATES
DYESTUFFS

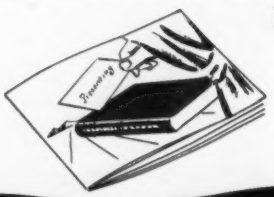
*Reg. U. S. Pat. Off.

TEXTILES · PLASTICS · CHEMICALS

For Midwestern Distribution OF YOUR PRODUCTS



Experience and reputation are two vital requisites of a reliable distributor... and two important reasons for selecting G. S. Robins & Company as your sales representative. Since 1923 we have served industry in the mid-west by supplying them with America's leading chemical products and valuable technical assistance. As a result we have established ourselves as reliable distributors, and are constantly in a position to recommend and sell a great variety of products. If your firm is seeking mid-western representation, you will find our experience and reputation worthy of your product. Let us tell you more. Drop us a note and we'll send you a G. S. Robins & Company Brochure, completely detailing our facilities.

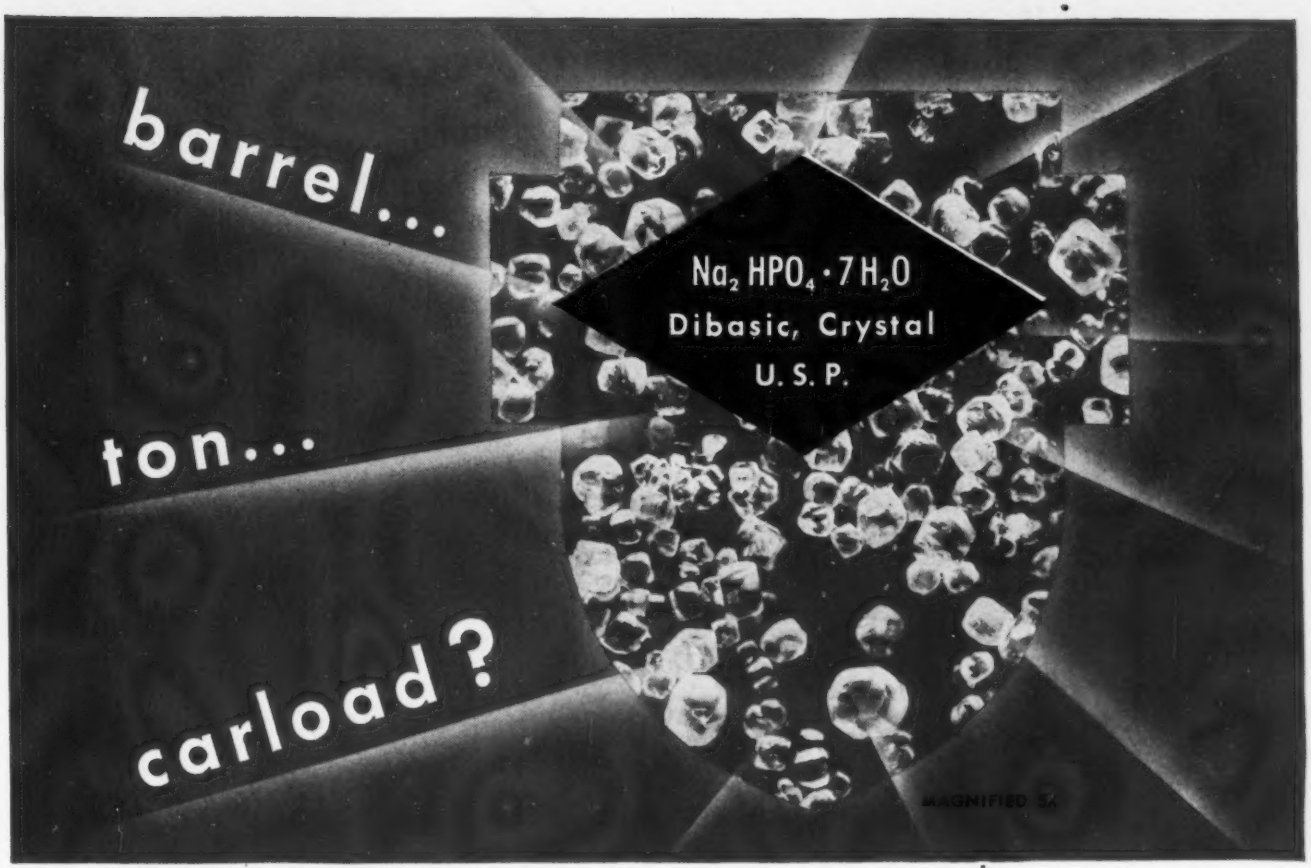


To obtain a copy of PRESENTING G. S. ROBINS & COMPANY, merely write to G. S. Robins, Dept. C-12, 126 Chouteau Ave., St. Louis 2, Mo.



G. S. Robins & Company 126 CHOUTEAU AVE. ST. LOUIS 2, MISSOURI

SODIUM PHOSPHATE*, DI, U.S.P.



In the manufacture of laxatives... urinary acidifiers... or other pharmaceuticals, when your process calls for a medicinal grade (U.S.P.) Disodium Phosphate, you can depend upon Baker & Adamson to meet your production schedule month after month with this pure, crystalline product.

Whatever your requirements, remember B&A is geared to the needs of leaders in the Industry . . . producing in extensive, modern plant facilities . . . using all the priceless experience gained in 63 years of manufacturing reagents to "decimal-point" purity.

What better source of supply for the pharmaceutical manufacturer who must have *quality* chemicals in *quantity* for his operations! For your needs—choose B&A Disodium Phosphate, U.S.P. . . . pure, reliable, readily available in barrel, ton, or even carload lots.

*Disodium Phosphate, U.S.P., is one of many basic pharmaceutical chemicals available in commercial quantities from B&A today. For these high-purity products—or for a special chemical "custom made" to your specific formula, consult nearest B&A Technical Service Office below.

Setting the Pace in Chemical Purity Since 1882

BAKER & ADAMSON B&A QUALITY STANDARD OF PURITY

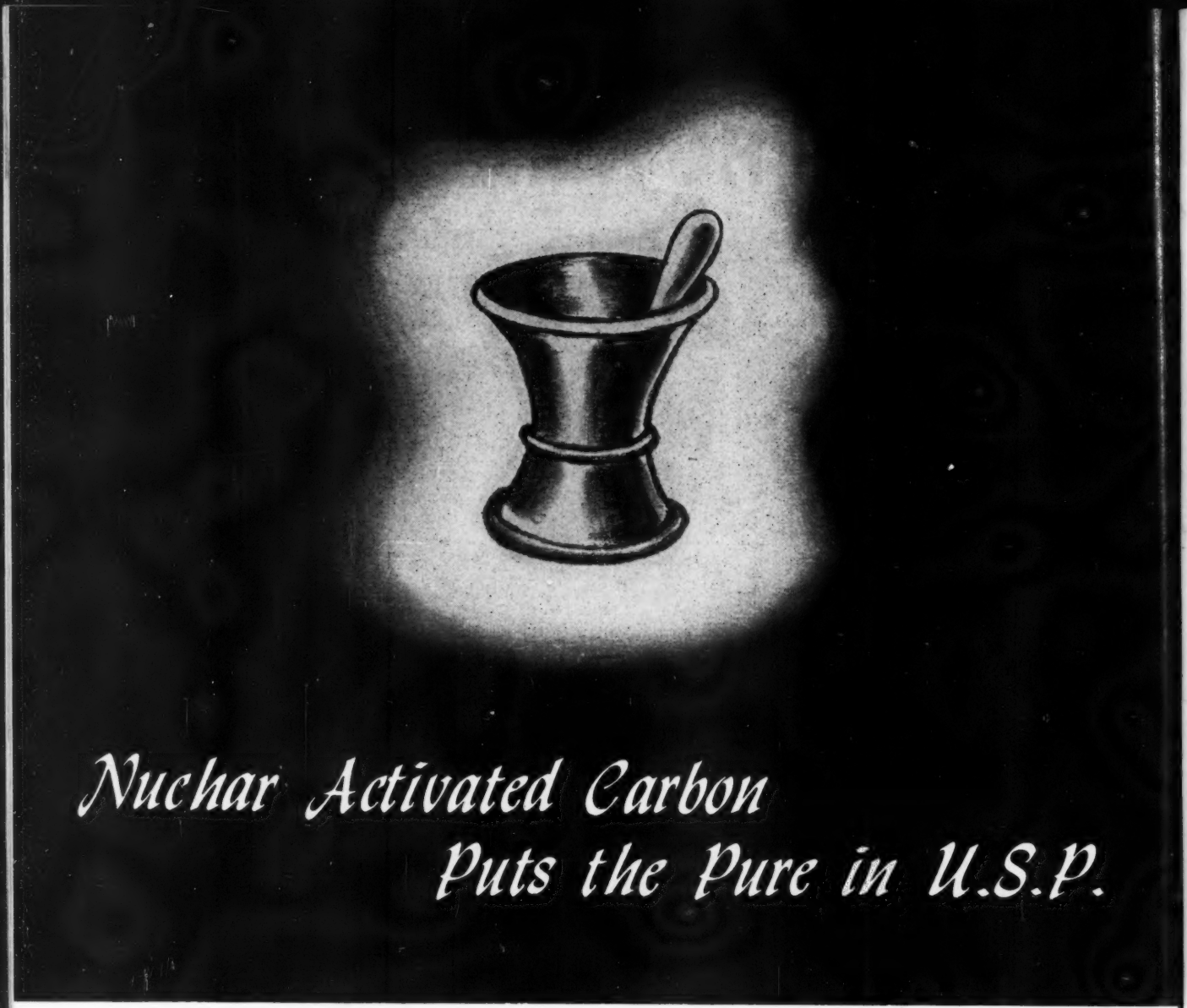
BAKER & ADAMSON *Reagent and Fine Chemicals*

Division of GENERAL CHEMICAL COMPANY, 40 Rector St., New York 6, N.Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence (R. I.) • San Francisco • Seattle • St. Louis • Utica (N. Y.) • Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver



Nuchar Activated Carbon Puts the Pure in U.S.P.

Nuchar Activated Carbon, universally accepted as a filtering medium—and as a decolorizing, clarifying, and purifying agent—is being used in the purification processes for the manufacture of drugs and pharmaceuticals. The treatment—by adsorption—of an ever-growing list of such products has made them more marketable and has lowered manufacturing costs. Among these products are salicylic acid and the salicylates, quinine salts, acetanilid, caffein, theine and similar alkaloids, pepsin extracts, medicinals, guaiacol carbonate, arsphenamine, ephedrine hydrochloride, penicillin and others.

The adsorption of colored and colorless impurities before recrystallization will often increase yield and give truer crystal form, reducing the number of crystallizations needed to obtain the desired purity. Melting point of organic compounds is improved in most cases by the use of Nuchar which removes minute traces of impurities.

In the treatment of U. S. P. calcium lactate, for instance, calcium lactate produced by fermentation of corn or similar raw materials, is first treated with Nuchar to remove color. Decolorization is made in two steps of a patented process. First step is at a slightly alkaline pH with subsequent decolorization barely on the acid side. Filtrate is then evaporated to 15° Baume' and allowed to crystallize. Dissolved in a small quantity of water, the crystals are again treated with Nuchar and filtered. Final filtrate is concentrated to only 11.5° Baume', allowing for a slow rate of crystallization and yielding pure crystals of U. S. P. calcium lactate.

Activated Nuchar is a valuable adjunct to chemical purification in cases where the reaction products are adsorbable.

Because of its tremendous adsorptive quality, Nuchar Activated Carbon has found wide acceptance in purification processes of the chemical industry. Our technical staff is constantly at work on purification problems of newly developed chemicals and will gladly assist you. Write today for a generous sample.

Nuchar Activated Carbons ★ Abietic Acid ★ Snow Top Precipitated Calcium Carbonate ★ Liquid Caustic Soda ★ Chlorine Indulin (Lignin) ★ Liqro Crude Tall Oil ★ Indusoil Distilled Tall Oil ★ Tall Oil Pitch ★ Sulphate Wood Turpentine

NUCHAR

INDUSTRIAL CHEMICAL SALES

DIVISION WEST VIRGINIA PULP AND PAPER COMPANY

230 PARK AVENUE, NEW YORK 17, N.Y. · 35 E. WACKER DRIVE, CHICAGO 1, ILLINOIS · 748 PUBLIC LEDGER BLDG., PHILADELPHIA 6, PA. · 844 LEADER BLDG., CLEVELAND 14, OHIO

Made to Order



The new products in your laboratory today may never have been carried in bulk. They may need special pressure or temperature control, special features to guard against contamination.

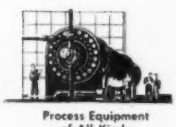
General American engineers have met such problems before. They have designed cars for the economical transportation of Helium, Sulphuric Acid, Chlorine, Caustic Soda and many other hard-to-handle products.

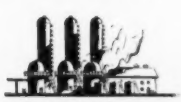
We're Ready to Plan with You Now

The General American tank cars built specifically for you will have the same reliable characteristics that have been proven during war and peace.


Builders and Operators of Specialized Railroad Freight Cars


Bulk Liquid Storage Terminals


Process Equipment of All Kinds


Pressure Vessels and Other Welded Equipment


Aerocoach Motor Coaches


Precooling Service for Fruits and Vegetables

GATX
GENERAL AMERICAN

GENERAL AMERICAN TRANSPORTATION
CORPORATION
CHICAGO

2 NEW, SAFE,* ECONOMICAL CATALYST AND POLYMERIZATION AGENTS

. . . decomposing at temperatures ranging from 70° C. to 250° C.

***These two interesting peroxides are not classified as explosive hazards by the Insurance Laboratories, Bureau of Explosives or I. C. C.**

*t-BUTYL PERBENZOATE

DESCRIPTION AND AVAILABILITY

A liquid, organic peroxide (8.00–8.50% available oxygen) which in addition to being relatively non-volatile and highly stable, is easily miscible with many Monomeric Materials, effectively catalysing these materials to form extremely clear, bubble-free films. *In limited commercial production. Samples will gladly be sent anyone interested.*

PROPERTIES

Molecular Weight	194
Available Oxygen	8.00-8.50%
Color	Light Yellow
Specific Gravity @ 20° C.	0.859
Refractive Index @ 25° C.	1.489
Vapor Pressure	Less than 10 mm. of mercury at 100° C.
Freezing Point	−2° to −4° C.
Decomposition Point	113°-116° C.
Sensitivity	Insensitive to shock, rubbing, grinding. Highly stable at room temperature.
Stability	Stable over iron, aluminum, copper, tin, zinc. Decomposes slowly over lead.
Solubility	Soluble in all proportions in all common organic solvents.

SUGGESTED USES

1. As an effective catalyst in bulk polymerizations.
2. As a good high temperature polymerization catalyst.
3. Wherever organic peroxides are of interest.

*t-BUTYL HYDROPEROXIDE

DESCRIPTION AND AVAILABILITY

An organic, alkyl peroxide that is standardized at a concentration of 60% (10.66% available oxygen). Use of proper activators increases the rate of release of oxygen. *In limited commercial production. Samples will be gladly sent anyone interested.*

PROPERTIES

Molecular Weight		90
Available Oxygen		10.66%
Color		Water White
Specific Gravity @ 25° C.		0.859
Refractive Index @ 25°C.		1.396
Boiling Range		90° - 107°C.
Flash Point		18.3°C.
Freezing Point		−35° C. to −36°C.
Decomposition Temperature		76.6° C.
pH of 1 part 60% Conc. in 10 parts water		4
Solubility	60% Conc. in water	11%
	Water in 60% Conc.	5%
	In short chain aliphatics	Excellent
	In aromatics	Excellent

SUGGESTED USES

1. As a catalytic agent in single and two phase polymerization reactions, as for example: in the polymerization of vinyl polymers and co-polymers; in the polymerization of diene hydrocarbons used in synthetic elastomers.
2. As a source of oxygen in the drying of paints.
3. As an oxidizing agent for laboratory purposes.

Address all inquiries to the Union Bay State Chemical Company, Peroxides Division, 50 Harvard Street, Cambridge 42, Massachusetts.

*U. S. Patents 2176407, 2223807, 2298405

UBS

UNION BAY STATE
Chemical Company

Serving Industry with Creative Chemistry

ORGANIC CHEMICALS · SYNTHETIC LATEX · SYNTHETIC RUBBER
PLASTICS · INDUSTRIAL ADHESIVES · DISPERSIONS
COATING COMPOUNDS · IMPREGNATING MATERIALS · COMBINING CEMENTS



BECCO ANNOUNCES

90% by weight!

HYDROGEN PEROXIDE CP

- Highly Concentrated Source of Oxygen. (1 Volume Yields 410 Volumes of Oxygen under Standard Conditions.)
- Leaves no residue.
- Reacts faster and more efficiently than dilute peroxide.

AVAILABLE IN COMMERCIAL QUANTITIES

Shipped in aluminum containers—250 lbs. net.

TYPICAL ANALYSIS

COLORLESS CLEAR LIQUID

H_2O_2	90%
H_2O	10%
Active Oxygen	42%

Total Residue less than 10 p. p. m.

Melting Point	−9.5°C.
Specific Gravity	1.4
Stability	can be stored without loss at 50°C.
Solubility	generally similar to that of water

BUFFALO ELECTRO-CHEMICAL COMPANY, INC.



STATION "B" • BUFFALO 7, NEW YORK

4 VERSATILE VARNISH RESINS... *Back on the job!*

In the past months since V-J Day, many varnish-makers have "rediscovered" these four veteran S & W varnish resins. Immediately available in any desired quantity, they can be used with a wide range of oils to produce tough, durable varnish, enamel, or paint films. They're easy to work with and are reasonably priced. Write or phone U. S. Industrial Chemicals, Inc. for samples and specifications.



S & W AROCHEM 335

This modified phenolic resin works equally well with most oils in rubbing varnishes, implement, and machinery finishes, structural primers, etc. AROCHEM 335 kettles easily, has good solubility and promotes rapid bodying and hardening. Use where minimum after-yellowing is important.



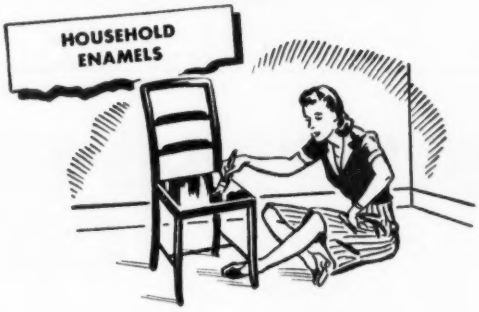
S & W AROCHEM 365

Good chemical resistance and low cost characterize this modified phenolic resin, widely used in floor varnishes, colored utility enamels, chassis enamels, etc. AROCHEM 365 offers high gloss and alkali resistance, short tack-free time, and good overnight hardness.



S & W AROCHEM 603

Developed for good performance with the "soft" oils, AROCHEM 603 is a non-phenolic resin which yields fast-drying vehicles and films with good color retention. Especially adaptable for "white" formulations. Varnishes made with it body very fast. Recommended for porch and deck paints, quick-drying enamels, tin decorating finishes, etc.



S & W AROCHEM 607

Similar to S & W Arochem 603, but higher in synthetic condensate content, this resin also has a higher melting point and will consequently body and dry faster. Color retention and durability are further improved.

U.S. INDUSTRIAL CHEMICALS, INC.
60 East 42nd Street, New York 17, N. Y.

Glycerine *Rates High In New-Product Planning*

—Here's Why!

GLYCERINE, known to so many chemists in so many different fields, is high on the list in plans for new products because it has *the right combination of properties.*

For instance, its *viscosity* is high and uniform. Its high degree of *permanence* is of value in many industrial fields. Its *wholesomeness* is proved in foods, confectionery, ice cream, cosmetics, drugs, transparent wrappings. It is useful for this reason in textiles, too, especially where products touch the skin.

The *chemical reactivity* of glycerine is an advantage—in the making of alkyd resins and monoglycerides for paints; ester gum for varnishes; polyglycerols and chlorohydrins valuable in the food, drug, and resin industries.

The *humectancy* of glycerine is another advantage—in the processing of tobaccos, as an ingredient in cosmetics, foods, confectionery. Few materials offer such a *combination of properties* advantageous to the manufacturer.

Perhaps glycerine can be of value to *you*. For further information, write: Glycerine Producers' Association, **F-1,** 295 Madison Avenue, New York 17, N. Y.

Research Laboratories, Chicago, Ill.



HIGH VISCOSITY! The viscosity of glycerine is a standard. That is one of many reasons why this pure, wholesome, versatile material is so valuable in the making of *cosmetics*, such as leg make-up, creams and lotions.



LONG LASTING! Glycerine helps to give products long life—keeps them from drying out easily. Think of glycerine when you plan new products.



WHOLESOMENESS! Crystal-clear U.S.P. glycerine has real food value, substantially equivalent to carbohydrate. Naturally sweet. Use it in *cakes, candies, soft drinks, flavorings!*



CHEMICALLY REACTIVE! Many useful chemicals can be made from glycerine. Alkyd resins, ester gum, monoglycerides, polyglycerols, and chlorohydrins are a few.



HUMECTANCY! Glycerine solutions do not markedly differ from glycerine itself in humectant powers. A little goes far. To keep a product like *tobacco* moist, use glycerine.



"DUCK"

can mean a lot of different fabrics—

"Duck" is a term applied to hundreds of *different* widths, weights and constructions of heavier square-weave fabrics. The three shown here indicate ways in which constructions can vary.

The great range of fabric constructions, widths, weights and finishes normally produced by the mills we represent offers you the opportunity of selecting the one fabric that best meets your own particular requirements.

Our textile engineers are available to work with you in developing special constructions for unusual purposes.



SEND FOR SAMPLE BOOK

These fabric samples for the Plastic Industry represent 12 types of fabric—they have been selected from several thousand fabric constructions made in the 18 mills we represent. In addition to standard constructions, we develop fabrics to specifications.

WELLINGTON SEARS CO.
65 WORTH STREET NEW YORK 13, N. Y.



FINE CHEMICALS
Mallinckrodt
SINCE 1867

MALLINCKRODT CHEMICAL WORKS

78 Years of Service to Chemical Users

Mallinckrodt St., St. Louis 7, Mo. • 72 Gold St., New York 8, N. Y.

CHICAGO • PHILADELPHIA • LOS ANGELES • MONTREAL

BUY UNITED STATES WAR BONDS AND STAMPS

WORLD'S LARGEST PRODUCER OF SYNTHETIC RESINS

RCI

GENUINELY NEW

In Composition and Results

COSTS LESS!
COOKS FASTER!

YIELDS HIGHER VISCOSITY!
DRIES QUICKER!

NO. 2100 SUPER-BECKACITE

Not merely an improved product but an entirely new resin—that's No. 2100 Super-Beckacite, a truly high-light achievement in the development of surface coating resins. It's better in nearly every way than any previous resin—better in film and performance properties . . . better in physical characteristics . . . better for economy! From now on this pure phenolic is the No. 1 choice for high grade enamels and spar varnishes. Write to the Sales Department for further data on the most important advancement in a pure phenolic resin since RCI products first changed the industry.

ARMY E NAVY

REICHHOLD CHEMICALS, INC.

General Offices and Main Plant, Detroit 20, Michigan

Other Plants:
Brooklyn, New York • Elizabeth, New Jersey • South San Francisco, California • Tuscaloosa, Alabama • Liverpool, England • Paris, France • Sydney, Australia

SYNTHETIC RESINS • CHEMICAL COLORS • PHENOLIC PLASTICS • INDUSTRIAL CHEMICALS

DRASTIC PRICE REDUCTIONS

ON

SHARPLES ETHYLAMINES

Open New Research and Industrial Fields

The recent price reductions of Sharples Ethylamines are of such magnitude as to change radically previous ideas of the chemical industry with regard to fields of application. Many processes using the Ethylamines as solvents or reactants which were formerly economically impractical should now become commercially feasible and should be reconsidered. The possible utility of the Ethylamines in your manufacturing operations warrants immediate investigation.

Sharples Ethylamines are available in unlimited quantities. Specifications and use information are given below. Samples and a complete schedule of prices will be sent promptly upon request.

Specifications	Monoethylamine (70% aqueous sol'n)	Diethylamine	Triethylamine
Color	Water-white	Water-white	Water-white to light straw
Specific Gravity @ 20/20° C.	0.79 - 0.80	0.71	0.74 - 0.76
Water Insolubles	None	None	—
Minimum Amine Content	70.0% as Monoethylamine	98.0% as Diethylamine	88.0% as Triethylamine
Distillation:			
Initial boiling pt.	—	53.0° C. minimum	72.0° C. minimum
Final boiling pt.	—	59.5° C. maximum	95° C. maximum

PRESENT AND SUGGESTED USES

MONOETHYLAMINE 70% aqueous solution

PETROLEUM: Solvent extraction; preparation of amides useful in refining of lubricating oil; complex salt with CuCl useful for recovery of diolefins; intermediate for preparation of demulsifier.

SOLVENT: Selective solvent in petroleum and vegetable oil refining; solvent for wide range of organic compounds.

TEXTILE: Intermediate for synthesis of surface active agents, dyestuffs and sizing compounds.

RUBBER: Synthesis of vulcanization accelerator; stabilizer for latex.

PLASTICS: Condensing agent for urea-formaldehyde molding mixtures; preparation of various nitrogen ethylated amides which are useful as plasticizers; condensation products with other resin forming materials useful as moldings, coatings, adhesives and sizing compounds.

CERAMICS: Deflocculating agent for increasing strength of clay bodies.

PHARMACEUTICALS: Synthesis of medicinals.

PHOTOGRAPHY: Synthesis of photographic dyes.

DIETHYLAMINE

PETROLEUM: Solvent extraction; preparation of amides useful in refining of lubricating oil; complex salt with CuCl useful for recovery of diolefins; intermediate for preparation of gasoline stabilizer.

SOLVENT: Selective solvent in petroleum and vegetable oil refining; solvent for wide range of organic compounds.

TEXTILE: Intermediate for synthesis of surface active agents, dyestuffs and sizing compounds.

RUBBER: Intermediate for synthesis of a number of ultra-accelerators of vulcanization and acclerator activators for natural and synthetic rubbers.

PLASTICS: Condensation with other resin forming materials to give products useful for moldings, coatings, plasticizers and polishes.

PHARMACEUTICALS: Intermediate for synthesis of certain local anesthetics, antimalarials, antiseptics and other medicinal chemicals.

COSMETICS: Intermediate for synthesis of emulsifiers.

TRIETHYLAMINE

PETROLEUM: Agent for improving recovery of catalyst in fluid cracking operations.

SOLVENT: Catalytic solvent in chemical synthesis; solvent for many organic compounds; stabilizer for certain chlorinated hydrocarbons.

TEXTILE: Preparation of wetting, penetrating and waterproofing agents of quaternary ammonium types.

RUBBER: Preparation of accelerator activator for natural and synthetic rubbers.

COSMETICS: Preparation of emulsifying agents and germicides.

(If required for specific applications, an anhydrous grade of Triethylamine is available at increased price.)

SHARPLES TRADE MARK CHEMICALS

Sharples Chemicals Inc.

PHILADELPHIA · CHICAGO · NEW YORK

SHARPLES SYNTHETIC ORGANIC CHEMICALS

PENTASOL* (AMYL ALCOHOLS)
PENT-ACETATE* (AMYL ACETATE)
PENTALARM* (AMYL MERCAPTAN)

BURAMINE* (BUTYL UREA, Tech.)
PENTAPHEN* (p-tert-AMYL PHENOL)
VULTACS* (ALKYL PHENOL SULFIDES)

PENTALENES* (AMYL NAPHTHALENES)

AMYLAMINE
DIAMYLAMINE
TRIAMYLAMINE

ETHYLAMINE
DIETHYLAMINE
TRIETHYLAMINE

BUTYLAMINE
DIBUTYLAMINE
TRIBUTYLAMINE

DIETHYLAMINOETHANOL
ETHYL MONOETHANOLAMINE
ETHYL DIETHANOLAMINE
MIXED ETHYL ETHANOLAMINES
DIBUTYLAMINOETHANOL
BUTYL MONOETHANOLAMINE
BUTYL DIETHANOLAMINE
MIXED BUTYL ETHANOLAMINES

TETRAETHYLTHIURAM DISULFIDE
TETRAETHYLTHIURAM MONOSULFIDE
TETRAMETHYLTHIURAM DISULFIDE
ZINC DIETHYLDITHIOCARBAMATE
ZINC DIMETHYLDITHIOCARBAMATE
ZINC DIBUTYLDITHIOCARBAMATE
CUPRIC DIETHYLDITHIOCARBAMATE
SELENIUM DIETHYLDITHIOCARBAMATE

AMYL CHLORIDES
DICHLORO PENTANES

o-AMYL PHENOL
DIAMYL PHENOL

MIXED AMYLENES
AMYL SULFIDE

DIAMYLPHENOXY ETHANOL

* Trademark Registered

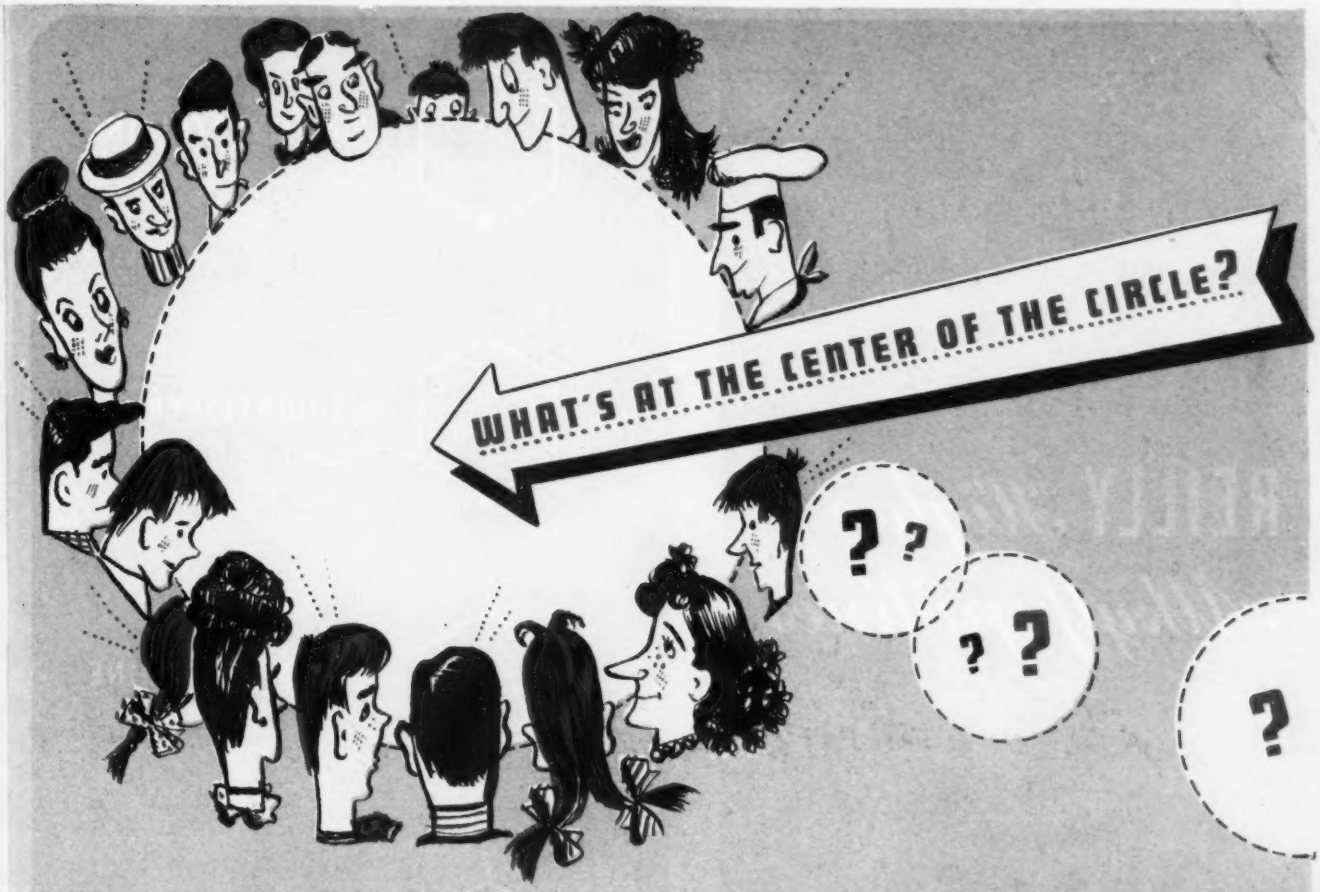
SHARPLES CHEMICALS INC.

EXECUTIVE OFFICES: PHILADELPHIA, PA.
PLANT: WYANDOTTE, MICH.

Sales Offices

New York Chicago Salt Lake City

West Coast: MARTIN, HOYT & MILNE, INC., Los Angeles . . San Francisco . . Seattle
Canada: SHAWINIGAN CHEMICALS LTD., Montreal, Quebec
Export: AIRCO EXPORT CORP., New York City



Alert executives in many industries became curious . . . found out . . . told others . . . and the circle grew. It is still growing as new products become members of KELCO ALGIN'S expanding circle of friends.

The food, pharmaceutical and industrial fields continually find new uses for KELCO ALGIN as stabilizer, suspending agent, thickener or bodying agent and hydrophilic colloid. They have come to depend upon the predictable results which arise out of KELCO ALGIN's uniformity.

Unlike other nature products—which vary in response to their changing conditions of growth and environment—KELCO ALGIN is a pure and stable seaplant derivative. It is easily controlled and confined to whatever precise standards are established for any specific purpose.

For complete information about the advantages to you of using KELCO ALGIN, inform us of the application you have under consideration.

KELCO
REFINED ALGIN PRODUCTS

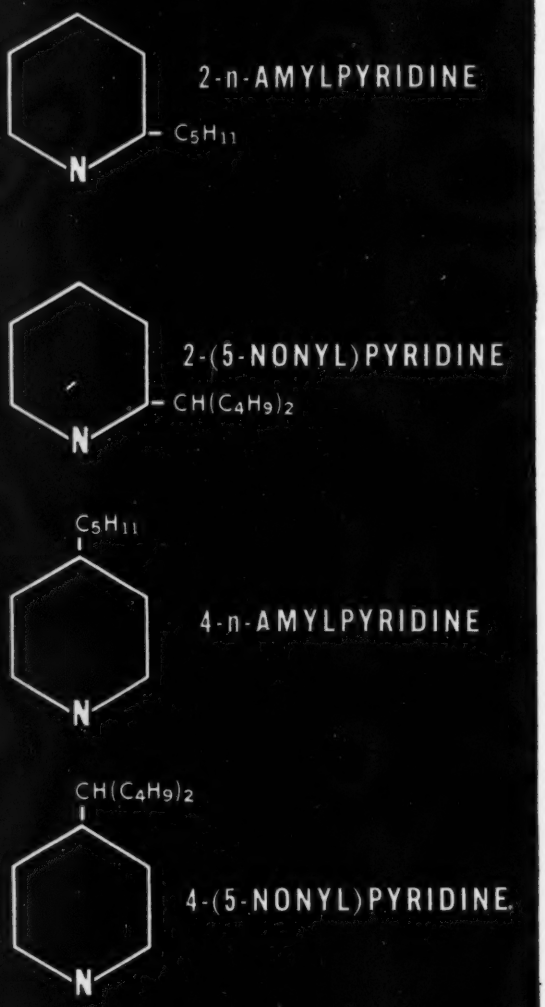
KELCO COMPANY

75 E. Wacker Drive
CHICAGO-1

31 Nassau Street
NEW YORK-5

530 W. Sixth Street
LOS ANGELES-14

REILLY *Higher Alkylpyridines*

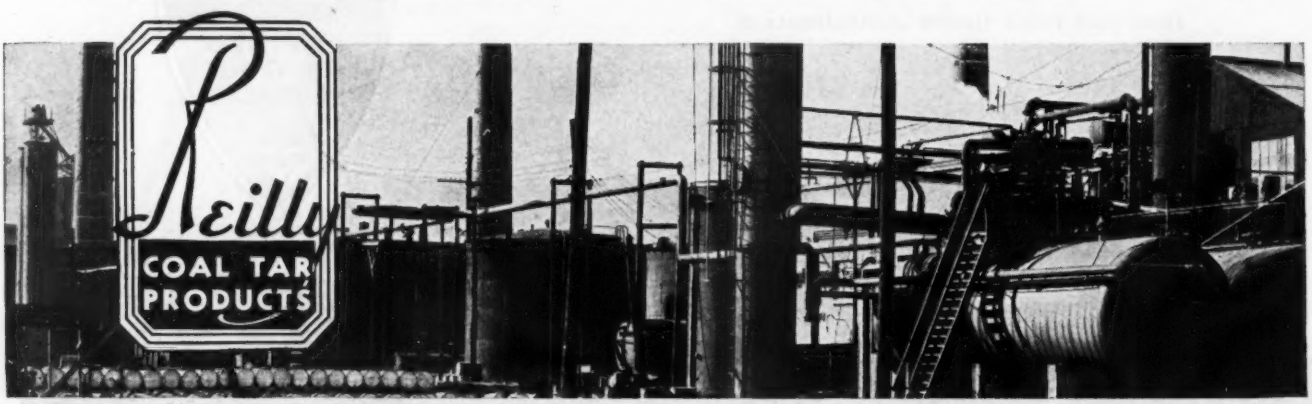


Four new and interesting alkylpyridines are now available through Reilly Tar & Chemical Corporation. Each of the materials is produced in 95% purity. Suggested uses for these Alkylpyridines are in the manufacture of disinfectants, medicinals, insecticides, rust preventives, anti-oxidants, rubber accelerators, wetting agents and in various organic syntheses.

OTHER REILLY BASES: Pyridine, Alpha Picoline, Beta Picoline, Gamma Picoline, 2, 6-Lutidine, 2-Hexylpyridines, 2-Vinylpyridine, 2-Aminopyridine, Quinoline, Quinaldine, Lepidine, Isoquinoline, 3-Methylisoquinoline.

Send for 56-page booklet describing the complete Reilly line of coal tar bases, acids, oils, chemicals and intermediates.

REILLY TAR & CHEMICAL CORPORATION
Merchants Bank Bldg., Indianapolis 4, Indiana
500 Fifth Ave., N.Y. 18 • 2513 S. Damen Ave., Chicago 8



DEPENDABLE COAL TAR CHEMICALS FOR INDUSTRY

Scenes like this were common **IN THE 50's**
when our founders established this business



The renowned
Flame-Grain Kaywoodie,
inlaid with Turkish *Meerschaum*,
$12.50
Shape No. 07. "Billiard."

PHOTO BY MATHEW BRADY

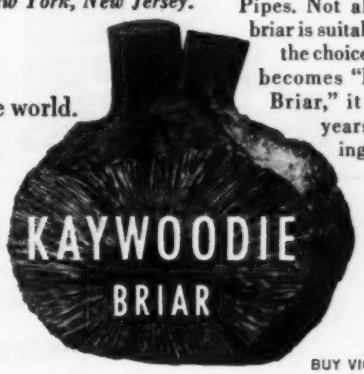


A rare old photograph of Lower BROADWAY, NEW YORK CITY, as it looked to our founders when they were making pipes nearby. They began this business in 1851 at No. 59 The Bowery, and in 1860 moved to No. 121 William St. A reproduction of the Broadway illustration in colors, together with booklet illustrating Kaywoodie Pipes, will be sent on receipt of 10¢ to cover costs. Write to Kaywoodie Company, West New York, New Jersey.

Only IMPORTED briar is used, in making Kaywoodie Pipes. Not all imported briar is suitable, but only the choicest. Before it becomes "Kaywoodie Briar," it undergoes years of seasoning and curing.

Kaywoodie Pipes are well known to pipe smokers in all parts of the world. Each Kaywoodie is the product of 94 years of pipe manufacturing experience. The qualities that make pipe smoking more enjoyable will always be found in Kaywoodie. Kaywoodies may be had at your dealer's for $3.50 to $25.

Kaywoodie Company, New York and London.



COPR. 1945

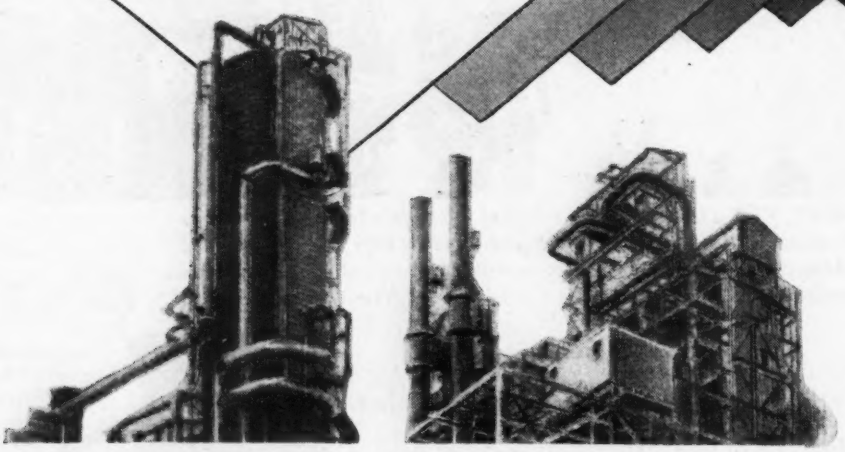
BUY VICTORY BONDS

From the catalog of Barrett Basic Chemicals

DIBUTYL PHTHALATE

A clear, high boiling water-white liquid used widely as a modifying agent and plasticizer with natural and synthetic resins as well as with certain synthetic elastomers.

Specific Gravity	1.047 to 1.049 at 20°C/20°C
Ester Value, 4 Hour Heating Period on the Steam Bath.	99% by weight minimum
Acidity, Free Acid as Phthalic Acid	0.01% by weight maximum
Color	Water white
Odor	Substantially none
Water	Miscible without turbidity with 19 volumes of 60° A.P I. gasoline at 22°C
Appearance	Clear and free of suspended matter
Availability	Tank cars, 50-55 gallon non-returnable steel barrels and small containers.



THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

In Canada: The Barrett Company, Ltd., 5551 St. Hubert Street, Montreal, Que.

Barrett

H_3PO_4 An "old dog" that is learning New tricks

Can Phosphoric Acid "turn a trick" for YOU?

With improved and enlarged production facilities, we solicit your inquiry for—

V-C PHOSPHORIC ACID 85% U.S.P. SYRUPY

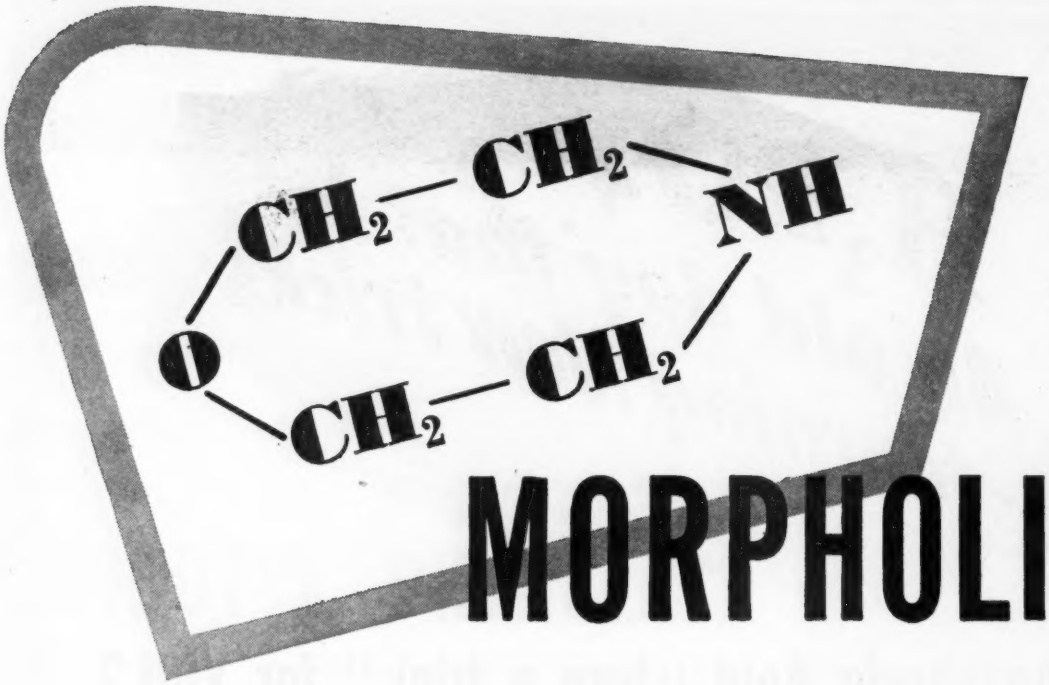
V-C H_3PO_4 85% Technical Grade
V-C H_3PO_4 75% Food Grade
V-C H_3PO_4 50% Food Grade

VC CHEMICALS

VIRGINIA-CAROLINA CHEMICAL CORPORATION

RICHMOND 5, VIRGINIA

Hand in hand with Industry



MORPHOLINE

An Important Industrial Amine

● Morpholine—a colorless, alkaline liquid—is available in tank-car and drum quantities for a variety of applications. It has become increasingly important in the formulation of

EMULSIONS

emulsions such as rubless floor polishes, shoe polishes, fruit waxes, paper coatings, paints, insecticides, and other mixtures which benefit by the use of a volatile emulsifier. The moderate volatility of morpholine causes it to evaporate gradually from the emulsion film, leaving the film resistant to subsequent water treatments.

CORROSION INHIBITOR

Morpholine, miscible with water in all proportions, is a good corrosion inhibitor for steam boilers and steam heating systems. Morpholine is the active ingredient of "Morlex" corrosion-inhibitor A, and because its dilute water solutions evaporate with very little change in composition, it inhibits corrosion in the steam piping and condensate return lines, as well as in the boiler itself.

ORGANIC SYNTHESIS

Morpholine shows interesting possibilities in organic synthesis. As a secondary amine it undergoes reactions typical of this group. The substituted morpholines — methyl, ethyl, hydroxyethyl, aminoethyl, and phenyl morpholine — are tertiary amines. They show promise as insecticide and fungicide raw materials, in mineral- and ore-treating compositions, and as intermediates for textile, rubber, paper, and leather chemicals.

For further information write for the booklet "Amines" (Form 4770).


RUBLESS FLOOR POLISH


PAPER COATINGS


SHOE POLISHES


WATER PAINTS


INSECTICIDES

BUY AND HOLD UNITED STATES VICTORY BONDS AND STAMPS

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

UCC

30 East 42nd Street, New York 17, N. Y.

SYNTHETIC ORGANIC CHEMICALS

"Morlex" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

ORONITE
CHEMICALS

THE NAME TO WATCH IN CHEMICALS



THE SOURCE IS AS IMPORTANT AS THE PRODUCT

Whether from tree or test tube, rubber as we use it is a product of chemistry. Hence the rubber product . . . tire for automobile or nipple for baby's bottle . . . is no better than the ingredients used and the men who made it. "Oronite"* is the name to watch in chemicals. Behind it stand an able group of research chemists and a firm whose resources and integrity are preeminent.

Whether you need products such as naphthenates, sulfonates, cresylics or something new in industrial chemicals, Oronite will be pleased to consider your problem. A note will not obligate you in any way.

ORONITE
CHEMICALS

THE NAME TO WATCH
IN CHEMICALS

*REG. U. S. PAT. OFF.

ORONITE CHEMICAL COMPANY

Russ Building, San Francisco 4, California
White-Henry-Stewart Bldg., Seattle 1, Wash.

30 Rockefeller Plaza, New York 20, New York
Standard Oil Bldg., Los Angeles 15, California

ONE OF MANY DOW CHEMICALS USED BY AMERICAN INDUSTRY



ON THE MOVE to serve manufacturers in many industries, vital Dow chemicals . . . uniformly high in quality . . . are shipped with promptness. Maintaining this standard of reliability and service has been a basic Dow rule for many years. DOW SODIUM SULPHIDE, supplied as flake and solid, 60-62%, is an important member of the great family of Dow Industrial Chemicals.

Sodium Sulphide

DOW INDUSTRIAL CHEMICALS

EPSOM SALT · Caustic Soda · Aniline Oil · Phenol · Magnesium Chloride · Carbon Tetrachloride · Glycols · and more than 75 others.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit Chicago • St. Louis
Houston • San Francisco • Los Angeles • Seattle

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

NEW CHEMICALS FROM DU PONT

Sodium Hydride

- For Claisen Condensations
  - Ester-Ester
  - Aldehyde-Ester
  - Ketone-Ester
- For Preparation of Sodium Derivatives of Unsaturated Alcohols and Other Organic Compounds.
- Hydrogenation Catalyst for Partial Reduction of Polynuclear Aromatic Hydrocarbons.
- Catalyst for Polymerization of Butadiene.
- For Inorganic Reductions

PROPERTIES OF SODIUM HYDRIDE

Formula	NaH
Appearance	White-to-Grey free-flowing powder
Molecular Weight	24.005
Melting Point	Decomposes reversibly above 130°C., rapidly above 400°C., to give hydrogen and molten sodium.

USE IN ORGANIC REACTIONS—Sodium Hydride has several advantages as a Claisen condensation agent. It does not reduce unsaturation in the reacting material; it increases the speed of the reaction; and it drives the reaction to completion without the need for tedious azeotropic distillation.

Sodium Hydride can be used instead of alkoxides to make any ester of acetoacetic acid and higher homologs of acetoacetic ester up to and including C_{18} acid esters. Since the hydride does not reduce carbonyl compounds, these Claisen condensations can be carried out at higher temperatures, i.e., 100°C.-130°C; if sodium were used at such temperatures, reduction reactions would predominate.

The hydride readily forms monosodium derivatives of compounds containing acidic hydrogen such as malonic ester and acetoacetic esters. It also can be used to form alcohol-free derivatives of unsaturated alcohols and acetylenic hydrocarbons, and in these cases also there is no simultaneous partial reduction of the unsaturation.

Sodium Hydride can be used as a catalyst for the partial hydrogenation of polynuclear aromatic hydrocarbons such as naphthalene, anthracene, fluorene, etc., even when contaminated with sulfur. It can also be used as a polymerization catalyst for butadiene and is a convenient catalyst for the addition of active methylene-containing compounds to acrylonitrile.

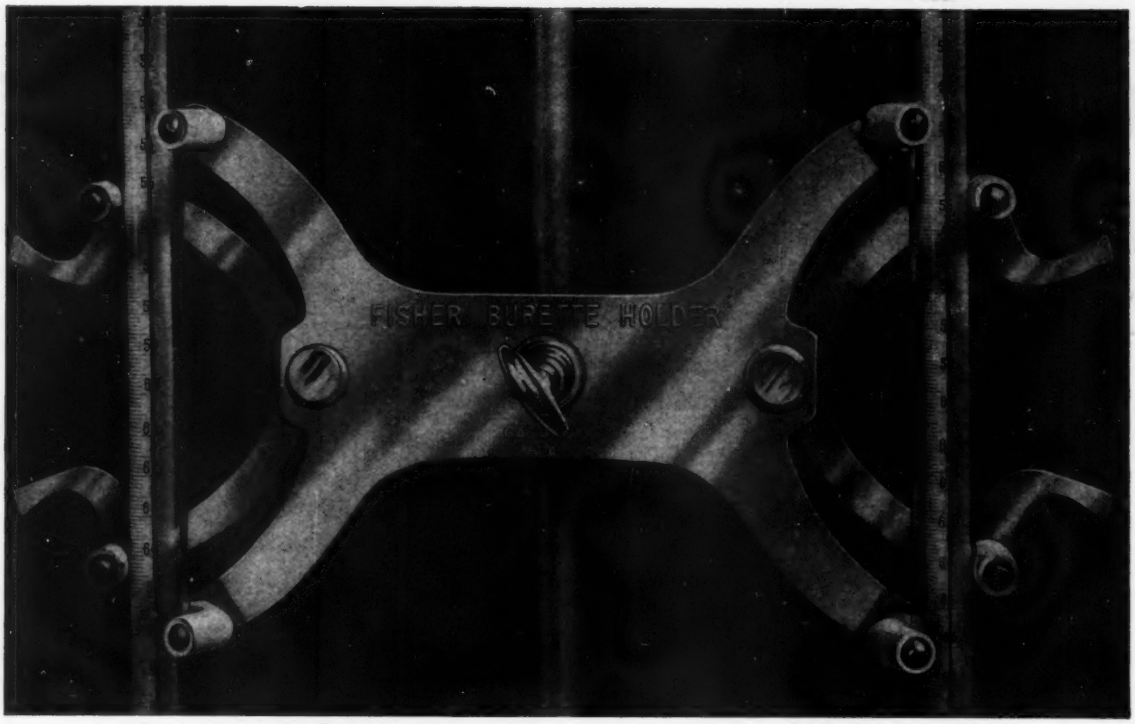
INORGANIC REACTIONS—Stable solutions of 2-5% of NaH in fused caustic soda can be prepared for use in reducing metal oxides to metals. Various metallic salts can be reduced to the metals by use of the hydride under appropriate conditions.

AVAILABILITY—Available in limited quantities for experimental purposes. For further information about the properties, uses and applications of Sodium Hydride, samples, etc., write: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Field Research Section, Wilmington 98, Delaware.

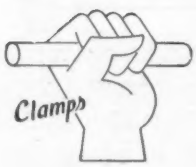
DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

DU PONT ELECTROCHEMICALS
FIELD RESEARCH SECTION



Modern Burette Support, one of 30 different Castaloy Appliances







The Evolution of Laboratory Hardware

The metal appliances now available to hold, support and manipulate the apparatus with which laboratorians work are no longer mere "hardware" since Fisher modernized this entire line by designing and manufacturing a whole new group of devices known as Castaloy Laboratory Appliances.

Each Castaloy Appliance has every little detail designed to perform its intended function more satisfactorily than heretofore and Fisher's shops make them with a tolerance of accuracy and a degree of precision not formerly embodied in similar inexpensive apparatus.

Castaloy appliances are stronger than those made of cast iron or stamped steel, they do not rust, they resist corrosion, they have distinctive mechanical features, they cost less because they last longer and they are a big improvement in appearance.

Up - to - date laboratorians now use Castaloy Appliances exclusively because of their utility, convenience and enduring service.

FREE BOOKLET

The entire line of Castaloy Modern Laboratory Appliances is described and illustrated in the booklet "Castaloy Laboratory Appliances" which will be sent free on request. Write for your copy today.

Castaloy Appliances are Available from Leading Laboratory Supply Houses

Manufacturers—Distributors

FISHER SCIENTIFIC CO. 717 Forbes St., **Pittsburgh (19), Pa.**
2109 Locust St., **St. Louis (3), Mo.**

EIMER AND AMEND Greenwich and Morton Streets **New York (14), New York**

Headquarters for Laboratory Supplies

PENN SALT
POTASSIUM CHLORATE

serves a variety of civilian uses!

BECAUSE OF ITS UNIFORMLY HIGH QUALITY, IT IS USED IN THE MANUFACTURE OF

- MATCHES
- DYES
- EXPLOSIVES

Penn Salt Potassium Chlorate is made to rigid standards in grades suitable for all manufacturing needs. Extremely active, it reacts rapidly and completely with other ingredients to produce an excellent fusion. Penn Salt controls its manufacture from the raw material to the finished products.

Write for detailed information

PENNSYLVANIA SALT
MANUFACTURING COMPANY
Chemicals

1000 WIDENER BUILDING, PHILADELPHIA 7, PA.

NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • CINCINNATI • MINNEAPOLIS • WYANDOTTE • TACOMA

No. 1 Source for Corrosive-Handling Equipment

No. 2 Booth at the Show

Rx PRESCRIPTION for PROCESSING

See the

General Ceramics Exhibit

at BOOTH No. 2

20th EXPOSITION OF CHEMICAL INDUSTRIES

Grand Central Palace, New York • Feb. 25–March 2, 1946

DURING the past twelve months General Ceramics has "prescribed" for your process such equipment as armored stoneware kettles, flanged towers, chemical stoneware pumps, chlorine cooling and drying equipment, and pump strainers. All of this equipment is not only corrosion resistant but corrosion *proof*. Each of these items is in use in various plants throughout the country and has proved its ability to withstand the ravages of corrosion and the wear and tear to which chemical process equipment is subjected. You have doubtless seen our drawings of these pieces of apparatus and have many questions to ask concerning them and their ability to "take it". Visit us at Booth #2 at the Chemical Show for an answer to these questions. Find out how General Ceramics engineers have applied chemical stoneware to secure the ultimate in resistance to corrosion, thermal shock and mechanical abuse. See how General Ceramics complete design facilities can relieve your purchasing and engineering departments of a heavy load of responsibility and detail.

We shall be ready to discuss any of your corrosion problems with you, and to offer suggestions for their solution through our specially designed equipment or through use of some of our many standard units, which include towers, storage vessels, cooling coils, and filters.

If you do not plan to be at the show, write to us for detailed bulletins — but if possible, make a date to see us at Booth 2. Let us show you the kind of work we have done and are prepared to do.

GENERAL CERAMICS AND STEATITE CORPORATION
CHEMICAL EQUIPMENT

BUFFALO: 610 Jackson Bldg. **CHICAGO:** 20 N. Wacker Drive
LOS ANGELES: 415 So. Central Ave. **PORTLAND 5, ORE.:** 410 New Fliedner Bldg.
NEW YORK: 30 Broad Street • **SEATTLE:** 1411 Fourth Ave. • **SAN FRANCISCO:** 598 Monadnock Bldg.
TACOMA: 417 Tacoma Bldg. • **HOUSTON:** 2015 Second National Bank Bldg.
MONTREAL: Canada Cement Bldg. • **TORONTO:** Richardson Agencies, Ltd., 454 King St., West
VANCOUVER, B.C.: Willard Equipment Ltd., 860 Beach Ave.

General Ceramics AND STEATITE CORP.

CHEMICAL EQUIPMENT DIVISION
KEASBEY, NEW JERSEY

In addition to the manufacturing facilities of the Chemical Equipment Division those of the Insulator Division are also available for handling ceramic problems in all branches of industry. General Ceramics & Steatite Corporation is therefore able to offer service covering all industrial applications of ceramic products.

Chlorinated • Paraffin • Resinous

Chlorowax

★ Resinous in Nature

★ Flame Resistant

★ Moisture Resistant

★ Compatible with Resins and Plastics

Just a few of the possible Post-War applications for Chlorowax



Industrial and Maintenance Paints

For all industrial purposes, interior and exterior; maintenance paints for residences and office buildings.



Lacquer Formulations

Chlorowax improves adhesion to metal, glass and wood. Increases chemical resistance of protective coatings.



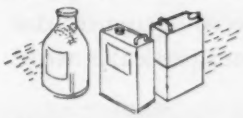
Surface Treatments and Polishes

Chlorowax content in surface coatings improves water and flame resistance; aids in preserving polished finishes.



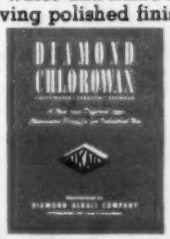
Textile Coatings

Flame and moisture resistant for awnings, canvas, drapes, gloves, machine covers, tents, tarpaulins, etc.



Glues and Adhesives

Invaluable in formulation of waterproof and flame resistant glues and adhesives.



Send for booklet

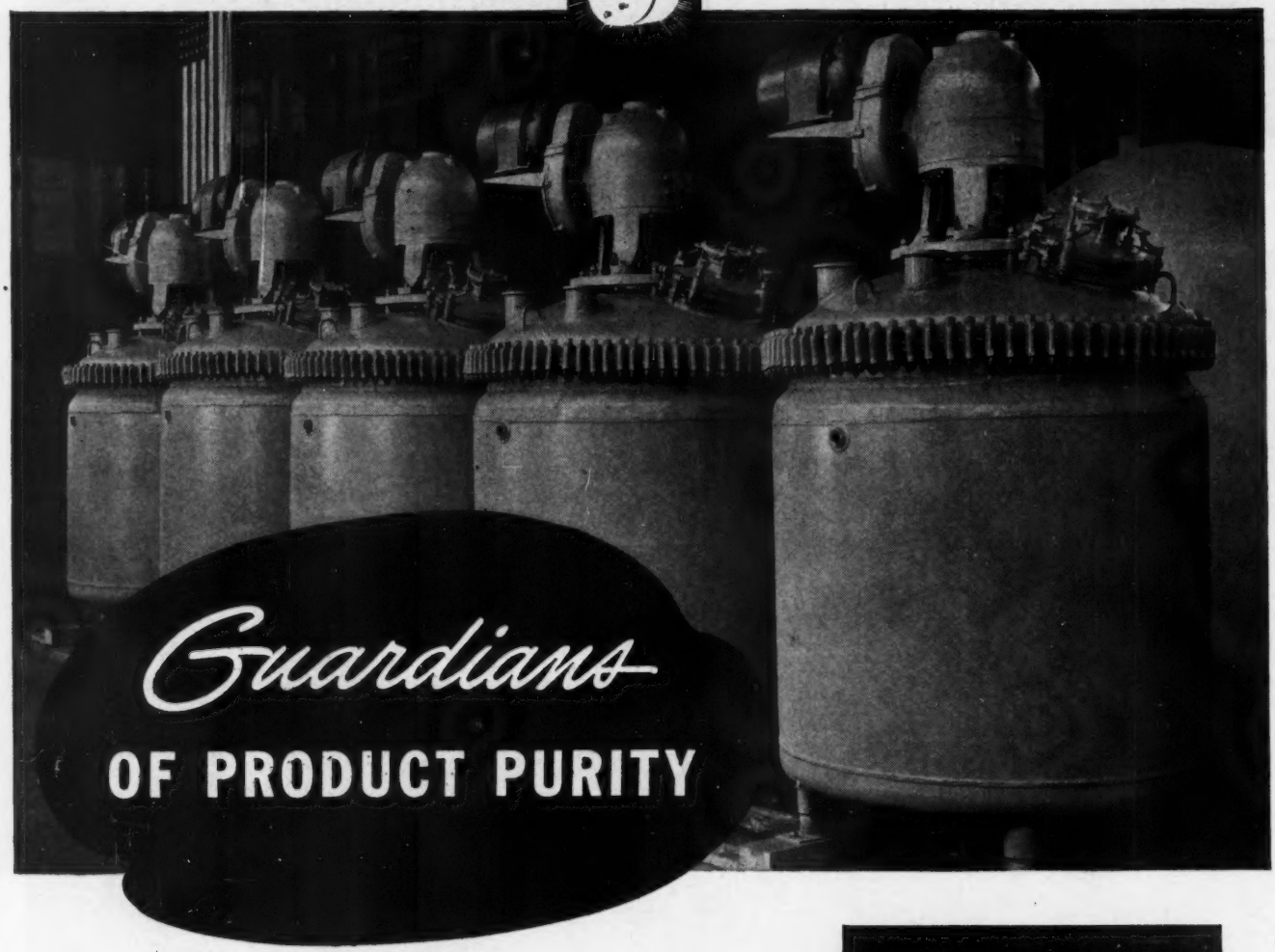
Gives information on properties and uses.

DIAMOND CHLOROWAX

DIAMOND ALKALI COMPANY

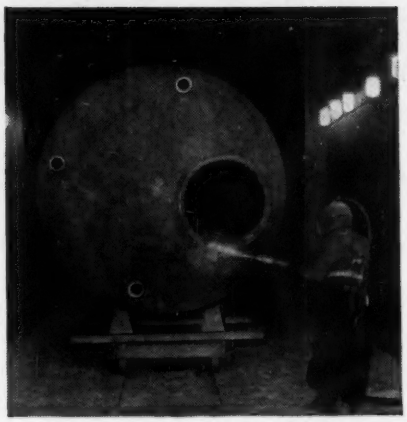
Pittsburgh 22, Pa.

THE INERTNESS OF GLASS  THE STRENGTH OF STEEL



Guardians OF PRODUCT PURITY

● Evenly and thoroughly lined with our "Royal Blue" glass, Glascote Reaction Kettles meet industry's most exacting requirements. The glass, developed by our engineers specially for this service, is chemically inert, non-toxic, and hard but not brittle. It is easy to clean, thus avoiding any intermixing of one batch with another, sometimes resulting in spoilage and waste. It safeguards the product being handled against contact with steel—and protects the equipment against corrosion. Glascote reaction kettles are furnished in a wide range of sizes—in one-piece or clamped top construction—with accessories to meet individual conditions. Let us help you in selecting a standard, or suggest a special equipment that will meet exactly the requirements of your particular needs!



Sand Blasting a 96" Diameter by 112" Straight Side Chemical Storage Tank Preparatory to Applying Glass Lining.

GLASCOTE PRODUCTS, INC.

20910 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

ENGINEERING AND SALES REPRESENTATIVES IN THE PRINCIPAL CITIES

CORROSION RESISTANT EQUIPMENT FOR THE PROCESSING INDUSTRIES



With all good
wishes for a
Merry Christmas
and a Happy New Year

PRIOR
CHEMICAL CORPORATION - NEW YORK

ISOPROPYL ALCOHOL

(ISOPROPANOL)

$CH_3-\overset{OH}{\overset{|}{C}}H-CH_3$

Molecular Weight 60.09

Many industries preparing to market new products are finding the answer to their surface coating problems in the economical low-boiling alcohol—Isopropyl. Since Isopropyl has a slower evaporation rate than similar alcohols in the same boiling range, less high-boiling alcohol is required to produce satisfactory blush resistance and flow-out.



Durable, high-gloss nitrocellulose lacquer finishes can be formulated with IPA for today's "automobiles of tomorrow."



IPA, a high latent solvent, should aid in the production of rapid-drying high solids lacquers and hot lacquers.

IPA is useful in formulating finishes with polyvinyl butyral, ethyl cellulose, phenolic laminating varnishes, and other resinous materials.



Can Isopropyl Alcohol solve your surface coating problems? Compartment or straight tank car shipments of IPA are immediately available

SPECIFICATIONS

Purity . . .	Minimum 99% isopropyl alcohol by weight
Specific Gravity 20°/20° C.	0.785 to 0.787
Color	Maximum 10 platinum cobalt (Hazen) standard
Water	Miscible without turbidity with 19 volumes of 60° Bé. gasoline at 20° C.
Acidity (other than carbon dioxide) .	Maximum 0.002% calculated as acetic acid
Distillation Range . . . . (A.S.T.M. D268/33) . .	Below 81° C. None Above 83° C. None
Non-volatile matter .	Maximum 2 mg. per 100 ml.
Water Solubility . . .	Completely miscible with distilled water
Weight	6.55 lbs. per gallon at 20° C. (approx.)

PHYSICAL PROPERTIES

Several of the physical properties of isopropyl alcohol are given in the following table:

Specific Gravity at 20°/4° C.	0.7848
Boiling Point at 760 mm.	82.3° C.
Melting Point	–89.5° C.
Flash Point, Tag Open Cup	69° F.
Tag Closed Cup	56° F.
Vapor Pressure at 0° C.	7.6 mm. Hg.
10° C.	15.9 " "
20° C.	31.5 " "
30° C.	58.8 " "
Specific Heat	0.595 (20° C.)
Refractive Index, N_D^{20}	1.37757
Coefficient of Expansion . . .	0.000630 per °F.
Latent Heat of Vaporization . .	159.2 gm. cal. per gm.
Heat of Combustion . . .	7950 gm. cal. per gm.

Azeotropic Data: Isopropyl alcohol forms a constant boiling mixture with water at 80.2° C., containing 87.7% by weight of compound.

For further properties and uses communicate with the address below

SHELL CHEMICAL Division of SHELL UNION OIL CORPORATION
100 BUSH ST., SAN FRANCISCO 6, CALIFORNIA

Faith . . . *faith in the future . . . faith in men of good will . . . eternally, these are the essence of the Christmas Season. As we pause to express Greetings to our friends in all those industries we serve, we renew our pledge of unstinted cooperation for the year ahead.*

NATIONAL ANILINE DIVISION • ALLIED CHEMICAL & DYE CORPORATION



THE TENNANT GROUP OF COMPANIES

ESTABLISHED 1797

Unique in Their Widespread Activities

. 1 .
CHARLES TENNANT & CO., LTD.
Glenconner Works, North Hillington, Glasgow, S.W.2
CHEMICALS, SOLVENTS, CEMENTS, COAL TAR PRODUCTS

. 2 .
CHARLES TENNANT & CO., LTD.
94 Royal Avenue, Belfast
CHEMICALS, FERTILISERS, CEMENTS, COAL TAR PRODUCTS

. 3 .
CHARLES TENNANT & CO. (EIRE), LTD.
1-3 Westmoreland Street, Dublin
CHEMICALS, FERTILISERS, CEMENTS, COAL TAR PRODUCTS

. 4 .
C. TENNANT SONS & CO., LTD.
66, Cheapside, London, E.C.2
CHEMICALS, CALCIUM CARBIDE, FERROUS AND NON-FERROUS METALS AND ALLOYS, FERTILISERS, POTASH, SILICA SAND, WOOD PULP, RUBBER, PRODUCE

. 5 .
TENNANTS (LANCASHIRE), LTD.
1 Booth Street, Manchester 2
CHEMICALS, DRYSALTERIES, TANNING MATERIALS, RAW MATERIALS FOR THE TEXTILE INDUSTRIES

. 6 .
PAN BRITANNICA INDUSTRIES, LTD.
Britannica Works, Waltham Abbey, Essex
FERTILISERS, INSECTICIDES, DISINFECTANTS

. 7 .
BARTER TRADING CORPORATION, LTD.
14 Waterloo Place, London, S.W.1
CHEMICALS, SOLVENTS, FORMALDEHYDE, SYNTHETIC CEMENTS AND RESINS

. 8 .
SYNTHITE, LTD.
Ryder's Green, West Bromwich
FORMALDEHYDE, PARAFORMALDEHYDE, ANTI-FREEZE, SOLVENTS

. 9 .
ADPRINT, LTD.
6 Newman Street, London, W.1
BOOK DESIGN AND PRODUCTION, COLOUR PRINTING

. 10 .
ASTROPLAX, LTD.
143 York Road, Belfast
FINISHING PLASTERS AND LYTOLL PARTITION BLOCKS

. 11 .
IRISH TAR DISTILLERS, LTD.
Oriel Street, North Wall, Dublin
TAR AND TAR BY-PRODUCTS, CREOSOTE

. 12 .
MARINE AND FACTORY SUPPLIES, LTD.
Albert Works, Greenland Street, Liverpool 1
SHIP CHANDLERS, BUILDERS' MERCHANTS AND STOCKISTS

. 13 .
SALERMO, LTD.
14 Waterloo Place, London, S.W.1
RETORTS FOR EXTRACTION OF OIL FROM OIL SHALES AND FOR LOW TEMPERATURE CARBONISATION

. 14 .
VICTOR CEMENT CO., LTD.
Glenconner Works, North Hillington, Glasgow, S.W.2
CEMENTS

. 15 .
AMERICAN-BRITISH CHEMICAL SUPPLIES, INC.
180 Madison Avenue, New York
CHEMICALS AND ALLIED PRODUCTS

. 16 .
KAY-FRIES CHEMICALS, INC.
West Haverstraw, New York
FORMALDEHYDE, INTERMEDIATES, PLASTICIZERS, AROMATICS

. 17 .
CHARLES TENNANT & CO. (CANADA), LTD.
137 Wellington Street, West, Toronto 1
DISTRIBUTORS OF CHEMICALS AND ALLIED PRODUCTS

EACH OF THESE COMPANIES TRADES AS A SEPARATE UNIT
The Tennant Group is represented by well introduced agents throughout the World.

American-British Chemical Supplies, Inc.

180 MADISON AVENUE, NEW YORK CITY

Telephone—AShland 4-2265 **Cable Address—Bisulphide, New York City**

MANUFACTURERS — IMPORTERS — EXPORTERS
"SINCE 1797"

Write for a copy of the Tennant Book

VITREOUS ENAMELING

simplified in production and *reduced* in cost by this

new Titanium Steel

ADVANTAGES

THE use of Titanium steel offers the listed advantages to the Vitreous Enamel Industry. These advantages have been proved in laboratory and plant operation where the recommended practice covering nickel flashing, pickling and enameling has been followed:

1. Elimination of enamel boiling due to steel defects.
2. Elimination of conventional ground coat.
3. Elimination of copper heading.
4. Improved sag resistance.
5. Improved resistance to warping.
6. Excellent deep drawing qualities.
7. Use of conventional cover coats directly on metal.
8. Resistance to hydrogen penetration or absorption.

The benefits you derive from these advantages are: Lighter enamel weights and coats... reduction of chippage and mechanical breakage losses... increase in production efficiency through reduction of rework and re-operation... sharply improved thermal shock resistance of white enamel, due to thinner enamel thickness... overall cost reduction for enameled ware... increase in production speed. Even when a ground coat is used this NEW Titanium Steel for Vitreous Enameling brings important manufacturing cost reductions.

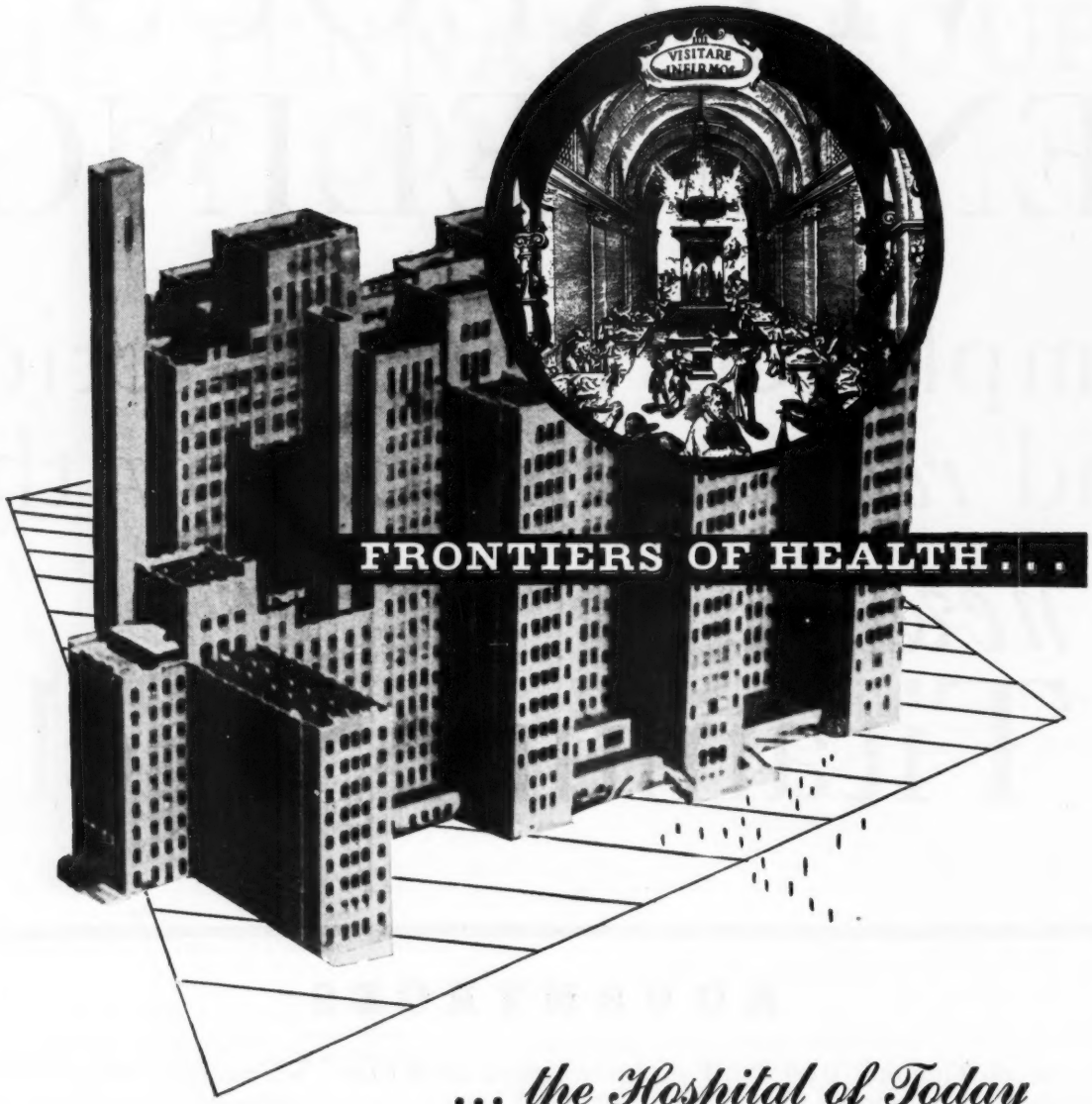
Manufacturers of both steel and enameled products may obtain complete factual technical data from a member of our Technical Staff, or by mail. Consult your steel supplier on deliveries.



Pending patent applications on the new enameling process and product made thereby are owned jointly by Inland Steel Company and The Titanium Alloy Manufacturing Company under Trust Agreement.

THE TITANIUM ALLOY MANUFACTURING COMPANY

Executive Offices: 111 BROADWAY, NEW YORK, N. Y. *General Offices and Works:* NIAGARA FALLS, N. Y.



... the Hospital of Today

From its earliest days, the hospital has been one of the frontiers of health. It is all of that — and in greater measure today. With recent developments in architecture, building and community planning have come the giant medical centers of metropolitan areas . . . the strategically-located rural health centers . . . the veterans' hospitals with emphasis on arts and crafts in aiding rehabilitation . . . many a place where light and air as well as human understanding and guidance assist surgery, medicine and planned nutrition through each stage from cure to recuperation.

Research, too, is a frontier of health. It serves man's well-being in many ways. Also there is the strict control of quality in the chemicals which go into pharmaceuticals. This is exemplified at Chas. Pfizer & Co., Inc. Laboratory research and control helps assure Pfizer quality in vitamins such as riboflavin, ascorbic acid, niacin and niacinamide . . . in penicillin . . . and in every one of more than a hundred chemicals. Chas. Pfizer & Co., Inc., 81 Maiden Lane, New York 7, N. Y.; 444 West Grand Ave., Chicago 10, Ill.

Manufacturing Chemists Since 1849

PFIZER

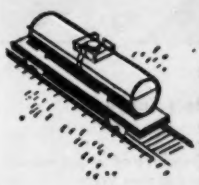


COLUMBIA CUSTOMERS WERE FIRST TO PROFIT

Through the years, Columbia has effected numerous improvements in the manufacture, distribution and handling of alkalies. Important new products have been introduced—in 1945 alone, for example, these included Butadiene Monoxide, Diglycol Chloroformate, Butyl Diglycol Carbonate, Butoxyethyl Diglycol Carbonate and Phenyl Diglycol Carbonate.

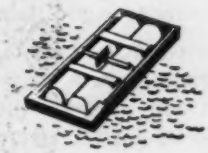
Although some Columbia developments are now widely used throughout the industry, Columbia customers were *first to benefit*—through better performance of chemicals in their processes . . . through substantial savings in their operating costs . . . through production of better finished goods.

USERS OF COLUMBIA CAUSTIC SODA



. through improved tank cars—were first to receive 73% Caustic Liquor without danger of metallic contamination . . . to be relieved of the necessity of steaming cars under all but extraordinary conditions . . . first to benefit through using Columbia unloading and handling procedures . . . first to obtain high grade diaphragm electrolytic Caustic, purified by a patented Columbia process.

NEW COLUMBIA BARGES



designed specifically to transport Liquid Caustic Soda and Liquid Chlorine—were first to bring important advantages to customers with plants located strategically in relation to inland waterways.

GLASS MANUFACTURERS



were first to obtain Soda Ash in controlled particle sizes matching those of the sand—providing a more uniform mix and more dependable results in glass products.

USERS OF PIGMENTS



have found those unique Columbia pigments, Calcene T and Silene EF, to be of immeasurable value, particularly in obtaining desirable qualities in both synthetic and natural rubber stocks.

These few examples are indicative of the results of a progressive policy . . . a policy which will continue to bring Columbia customers the advantages of many more "firsts."

COLUMBIA CHEMICALS

PITTSBURGH PLATE GLASS COMPANY • COLUMBIA CHEMICAL DIVISION

GRANT BUILDING, PITTSBURGH 19, PENNSYLVANIA

Chicago • Boston • St. Louis • Pittsburgh • New York • Cincinnati • Cleveland • Philadelphia • Minneapolis • Charlotte • San Francisco

COLUMBIA ESSENTIAL INDUSTRIAL CHEMICALS

Soda Ash • Caustic Soda • Sodium Bicarbonate • Liquid Chlorine • Silene EF (Hydrated Calcium Silicate) • Calcium Chloride • Soda Briquettes
Modified Sodas • Caustic Ash • Phosflake • Calcene T (Precipitated Calcium Carbonate) • Pittchlor

STOP CORROSION

Prufcoat Protective Coatings

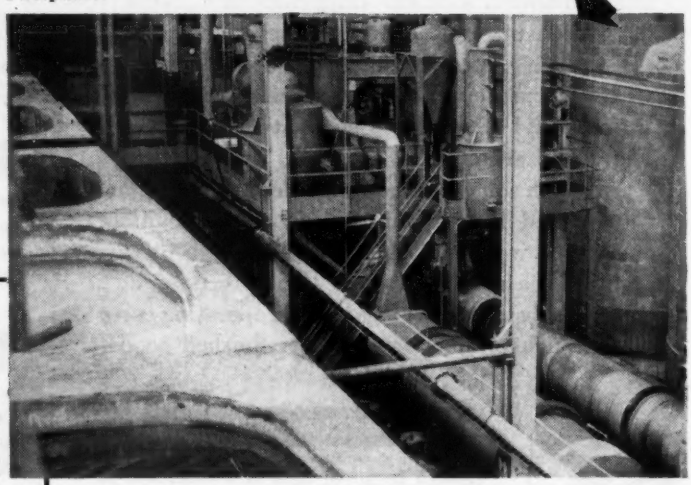
Cut Maintenance Costs

LOW original cost and long life of Prufcoat make its application on all surfaces the lowest cost method of maintenance. For Prufcoat costs only slightly more per gallon than ordinary paint, costs no more to apply, *and yet provides positive protection against acids, alkalis, oil and water.* Thus, longer life and less frequent repaint jobs make maintenance savings certain.

Proved in hundreds of America's largest industrial plants during the past five years*, Prufcoat is being used today not only in areas where corrosion is severe, but on all structural steel and concrete, inside and outside. For Prufcoat cuts maintenance costs whether the corrosion problem is mild or severe.

Whatever your problem may be, chances are Prufcoat can show you a performance-proved treatment. Write today for descriptive folder.

Prufcoat is in use on Concrete Structures, Steel Structures, Railway Tank Cars, Masonry Walls, Concrete Floors, Chemical Handling Equipment, Tank Trucks, Ventilating Systems, Cast Stone, Stucco, Brick, Sprinkler Systems, Cement Blocks, Chemical Tanks, *and has licked corrosion problems involving temperature ranges up to 230° F. and chemical agents such as* Acetic Acid, Alum, Bleach Solutions, Calcium Chloride, Chlorine, Cyanides, Formaldehyde, Flue Gases, Hydrofluoric Acid, Lactic Acid, Mineral Oils, Muriatic Acid, Nitric Acid, Oleic Acid, Oleum, Phosphoric Acid, Salt Solutions, Sodium Hydroxide, Steam, Sugar, Sulfonated Oils, Sulfuric Acid, Tri-Sodium Phosphate.





The Prufcoat film formed after Polymerization has virtually a zero acid number, saponification number and water absorption rate.

PERFORMANCE-PROVED ON CONCRETE AS WELL AS METAL SURFACES

Prufcoat Protective Coatings have been able to perform the heretofore thought impossible job of corrosion-proofing concrete, bricks, masonry, cast stone, etc., as well as metals and less troublesome surfaces. For the Prufcoat film is proof against the alkali reaction of concrete and similar materials, as well as acid-proof. Made from a special combination of synthetic resins and inert pigments, Prufcoat is applied by brush by your own maintenance crew, and dries by evaporation of the volatile solvents. Subsequent polymerization provides a tough, non-oxidizing, completely acid, alkali, oil and waterproof film. The Prufcoat vehicle is crystal clear and contains no drying oils, wax, stearates or bitumen. Plasticity can be controlled from permanent tackiness to brittleness, as desired. Available in a variety of standard colors, making possible identification of lines and other equipment by color.

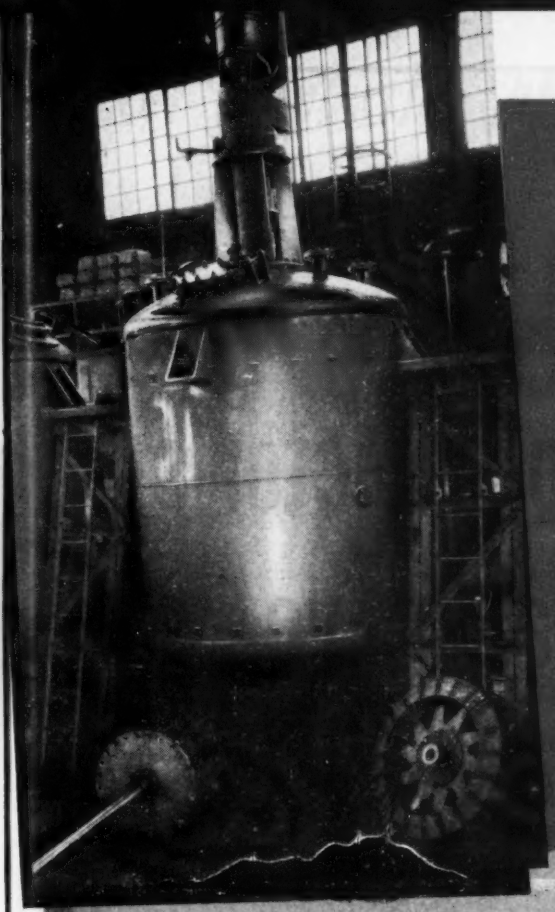
Prufcoat reports from some of America's largest plants (Names upon request)

- ★ Prufcoat on all structural steel, pipes, pumps and tanks subjected to continuous dilute sulfuric acid fumes, drips and spills. No failure in two years.
- ★ Entire concrete building coated with Prufcoat. No trace of failure due to blistering, peeling or chipping in over five years.
- ★ Prufcoat on railroad tank cars carrying mixed acids and caustics — spills have not affected the coating in over two years.
- ★ Prufcoat on exterior of muriatic acid storage tanks — no failure from spills or fumes since installation over two years ago.
- ★ After several years of experience, Prufcoat has been made the standard corrosion-proofing coating for all maintenance work throughout the plant.



PRUFCOAT gives Positive Protection against ACIDS, ALKALIS, OIL & WATER!

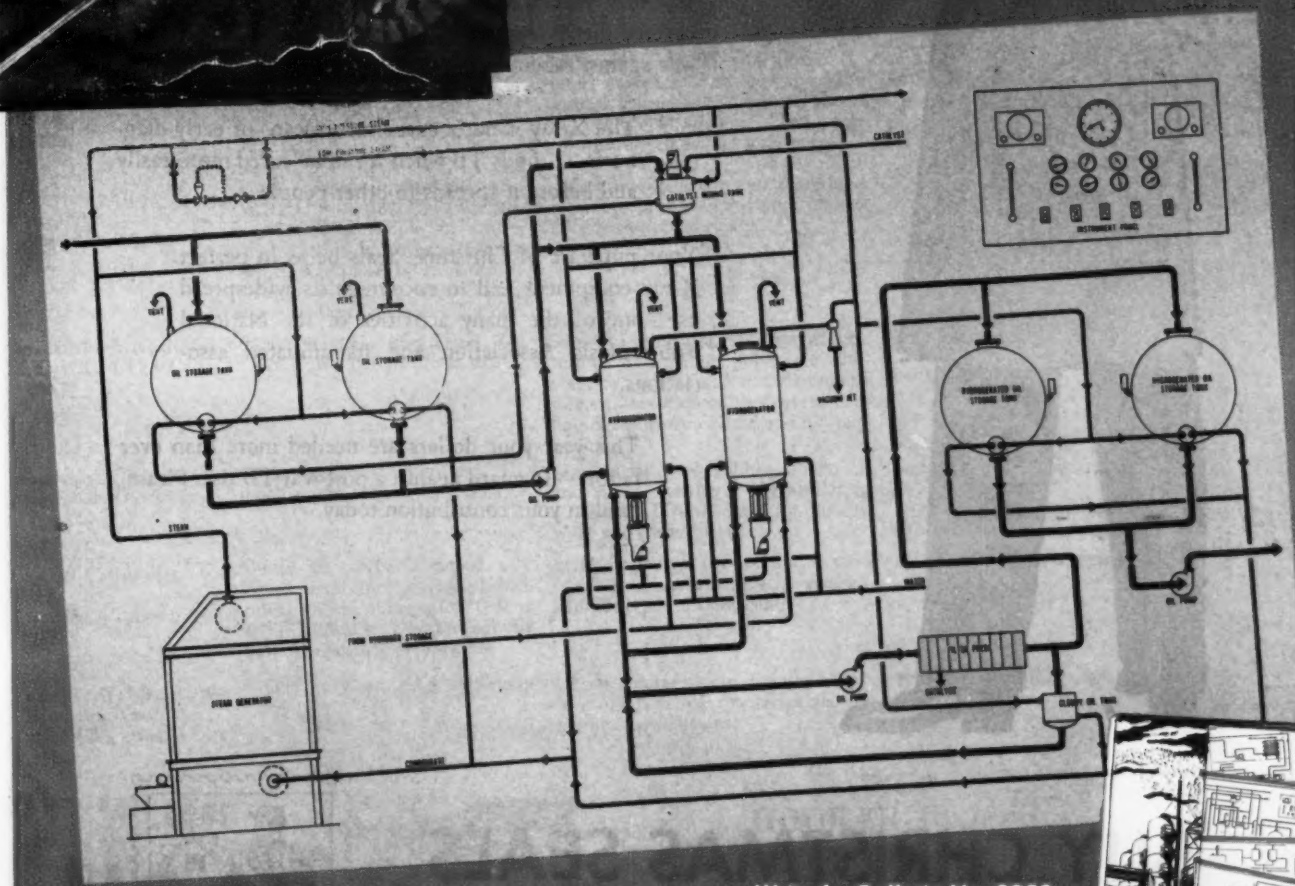
Prufcoat Laboratories Incorporated · 63 Main Street, Cambridge (42), Massachusetts



BLAW-KNOX

LEADS WITH EQUIPMENT FOR HYDROGENATION OF OILS

Selective hydrogenation of oils requires equipment capable of accurate adjustment for pressures and temperatures to a most exacting degree. Blaw-Knox engineers and fabricators have an outstanding reputation for successful building of such equipment and for their understanding of the practical problems always to be considered. This flow sheet is for a typical Blaw-Knox Hydrogenation System.





Write for Bulletin No. 2050 . . . on Blaw-Knox Equipment and Complete Plants for the Process Industries.

BLAW-KNOX DIVISION
of the Blaw-Knox Company
2093 FARMERS BANK BLDG., PITTSBURGH 22, PENNSYLVANIA
New York • Chicago • Philadelphia • Birmingham • Washington

BLAW-KNOX PROCESS EQUIPMENT



Your Doctor's Magic Eye!

Just fifty years ago this November, Roentgen discovered the X-ray—society's greatest weapon in the war against tuberculosis.

The X-ray is not a cure, but a means of early diagnosis . . . finds TB when it can be cured more easily and before it spreads to other people.

Your purchase of Christmas Seals helps to perfect X-ray equipment and to encourage its widespread use—one of the many activities of the National Tuberculosis Association and its affiliated associations.

This year your dollars are needed more than ever before—to guard against a post-war TB rise. Please, send in your contribution today.

BUY CHRISTMAS SEALS

Because of the importance of the above message, this space has been contributed by

CHEMICAL INDUSTRIES



Hooker Aliphatic Chlorides for a Variety of Uses...

HERE are some new open chain chlorides developed by Hooker. They show such varied characteristics and properties that among them may be the chemical that has potentialities for your particular project. A few of these chemicals are so new that we are able to supply them only in pilot plant quantities at the present time. Where demand warrants, production can be quickly stepped up to meet your needs.

Free Technical Data Sheets and samples of any of these Hooker Chemicals will be supplied when requested on your business letterhead. Our Technical Staff is also always on call for assistance in appraising the value of Hooker Chemicals in meeting your specific needs.

HOOKER RESEARCH *Presents*

TRICHLORCUMENE

$(CH_3)_2CHC_6H_2Cl_3$

The characteristics and properties of this chlorinated hydrocarbon indicate a wide spread utility in many different applications. Trichlorcumene (Isopropyl Trichlorbenzene), a mixture of isomers, is a colorless liquid with a mild aromatic odor. Of particular interest are its extremely low solubility in water, its high degree of resistance to oxidation and hydrolysis, and its unusual dielectric properties. Miscible with most common organic solvents. F. R. –30° to –45°C. B. R. 245° to 265°C. Trichlorcumene is suggested for use as hydraulic fluid, transformer, and dielectric fluids, anti-freeze additive for hydraulic, dielectric and heat transfer fluids, solvent for fats, oils, waxes, coal tar dyes, asphalts; solvent, diluent, and plasticizer for protective coating and insulating compositions; ingredient of insecticidal compositions, paint and varnish removers, paints, solvents and plastics. Write for technical data sheet No. 347 describing more completely its physical properties.

PRODUCT *Formula; Molecular Wt.*	DESCRIPTION (Sp. Gr. 15.5°/15.5°C)	SUGGESTED USES	AVAILABILITY
Chlorpropane Liquid 170 $C_3H_{1.5}Cl_6$(aver.); 268	Clear, colorless liquid. Sp. Gr. 1.725±.025 B.R. 195° to 260°C. Insoluble in water, soluble in alcohol, ether and most chlorinated solvents. Resistant to oleum, mixed acids, fuming nitric acid, and hydrogen fluoride.	Plasticizer, solvent, paint softener, insecticide, rubber and plastic modifier.	Pilot plant quantities.
Chlorinated Paraffins CP-20	Amber colored, viscous liquid, 42% chlorine.	Ingredients of compositions for flame, water and mildew proofing textiles. Ingredient of fireproof paints and other compositions. Plasticizers for various resins and polymers.	55-gal. drums containing 525 lbs.
CP-70	Amber colored resin, 70% chlorine. Powdered.		Fibre drums containing 150 lbs.
Chlorpropane Wax 130 $C_3H_{0.15}Cl_{7.85}$(aver.); 311	Tough, white crystalline wax. M.R. 110° to 155°C. B.R. 210° to 270°C. Insoluble in water, soluble in alcohol, ether and most chlorinated solvents. Resistant to oleum, mixed acids, fuming nitric acid, and hydrogen fluoride.	Plasticizer, dielectric wax, ingredient of pyrotechnic compositions, chemically resistant lubricant.	Pilot plant quantities.
Hexachlorbutadiene $CCl_2=CCl\cdot CCl=CCl_2$; 260.7	Clear, colorless liquid. Sp. Gr. 1.675±.025 B.R. 210° to 220°C.	Solvent for natural rubber, synthetic rubber and other polymeric substances, high boiling non-flammable solvent, non-flammable heat transfer liquid, transformer fluid and hydraulic fluid.	Pilot plant quantities.
Isopropyl Chloride $CH_3CHClCH_3$; 78.5	Clear, colorless liquid. Sp. Gr. 0.867 ±.003 B.R. 5° incl. 35.4°C.	Manufacture of rubber chemicals and other synthetic chemicals; as a solvent. Intermediate for insecticides and antiseptics.	5-gal. cans containing 35 lbs. 55-gal. drums containing 375 lbs.
Lauryl Chloride, Tech. $C_{12.6}H_{26.2}Cl$(aver.); 213.2	White to amber colored oily liquid. A mixture of n-alkyl chlorides, typical chlorine content is 16%. Insoluble in water, soluble in most organic solvents.	Intermediate in production of various esters, mercaptans and sulfides. Manufacture of detergents.	55-gal. drums containing 375 lbs.
Lauryl Pyridinium Chloride, Tech. $C_5H_5N(C_{12.6}H_{26.2})$ Cl; 291.9	Yellow-gray semisolid, soluble in water.	Cationic detergent in rayon industry. Manufacture of bactericidal and germicidal solutions.	Barrels containing 100 and 375 lbs.

HOOKER CHEMICALS

8350

ARMY E NAVY

HOOKER ELECTROCHEMICAL COMPANY

3 Forty-seventh St. **Niagara Falls, N. Y.**

New York, N. Y. • Wilmington, Calif. • Tacoma, Wash.

Caustic Soda **Muriatic Acid** **Sodium Sulfide**
Paradichlorbenzene **Chlorine** **Sodium Sulfhydrate**



FOUR ADHESIVE QUALITIES OF PQ SILICATES YOU NOW USE OR COULD USE . . .

Silicate of Soda is a soluble glass and upon seasoning, the glue line provides some of the properties of a flexible adhesive. Many adhesive uses require qualifications such as these:

Strong Bond:

Bonds formed by PQ Silicate adhesive brands are strong. For an illustration of this, the corrugated box shown (assembled, but unfilled) supports the weight of a man.



Fireproof:

PQ Silicate adhesives will not burn. Hence, they are used for adhering various mineral fibre products such as asbestos air cell, mill board, etc.



Vermin Resistant:

As a mineral adhesive, PQ Silicate does not spoil and is unattractive to vermin. For instance, attack by white ants on wall board has been stopped by the first silicate layer.



Economical:

Silicate of Soda is low-priced, delivered ready for use. When you have an adhesive or bonding problem, study these advantages.

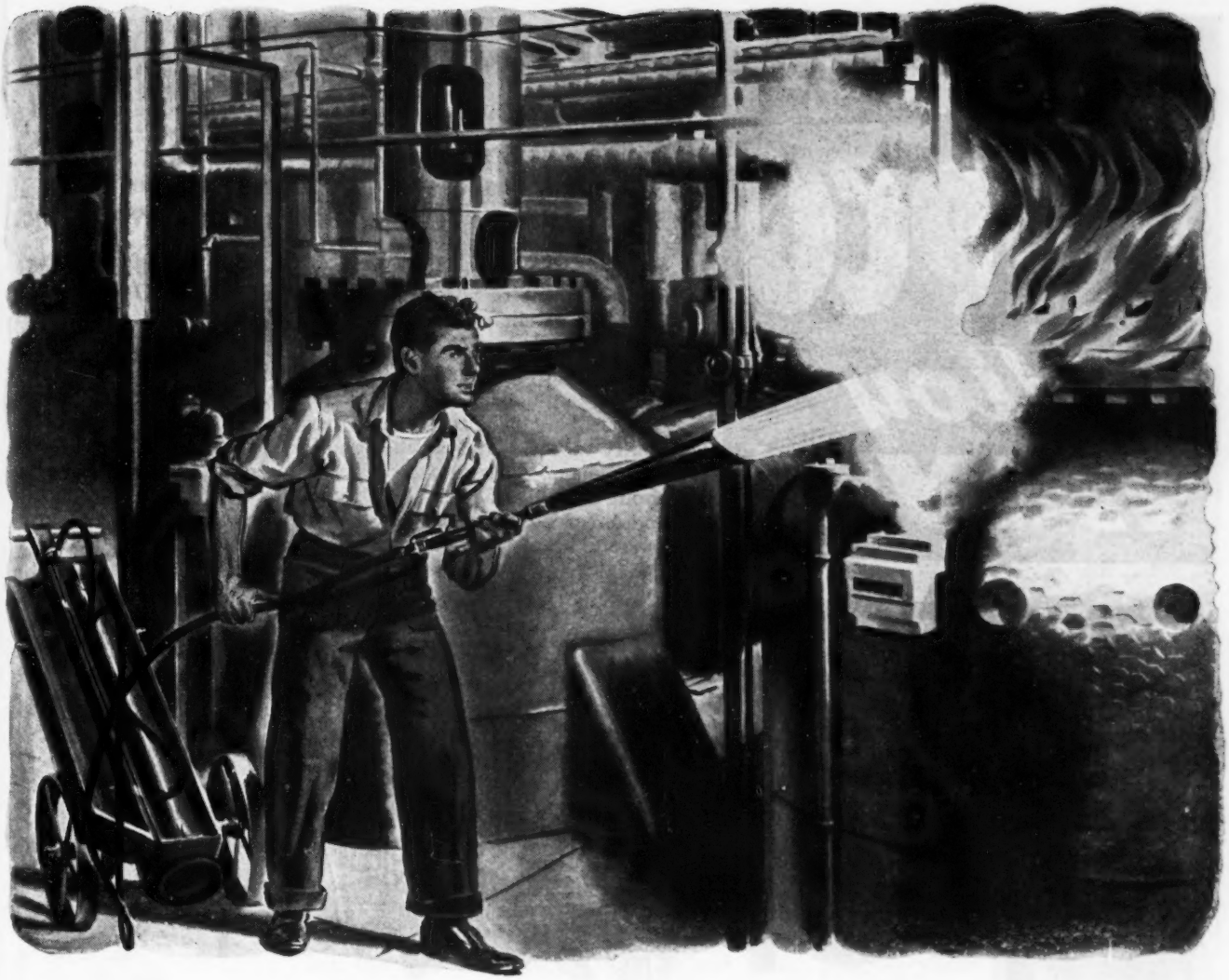
The PQ Silicate of Soda brands have been specially developed for easy spread, proper wetting and correct setting time. Have you a bonding problem that a silicate adhesive might solve? Let one of our adhesive service engineers help you.

PHILADELPHIA QUARTZ COMPANY

Dept. B, 119 South Third Street, Phila. 6, Pa.
Chicago Sales Office: 205 West Wacker Drive

PQ SILICATES OF SODA

WORKS: Anderson, Ind. • Baltimore, Md. • Chester, Pa. • Gardenville, N. Y. • Jeffersonville, Ind. • Kansas City, Kans. • Rahway, N. J. • St. Louis, Mo. • Utica, Ill.



It gets around fast . . . to hit fires hard!

WHEN fires break out in flammable liquids, rush a Kidde Wheeled Unit into action.

It covers ground fast, because it's easy to push, easy to maneuver. And at the scene of the blaze, it throws a tremendous fire-fighting punch . . . 50, 75, or 100 pounds of carbon dioxide gas!

Carbon dioxide, of course, has long been recognized as one of the fastest, most effective agents for killing flammable liquid fires. Discharged under high pressure from its own stored energy through Kidde shielded nozzles, it quickly smothers the blaze under a dense blanket of gas.

Equally important . . . the dry, inert gas cannot dilute or contaminate valuable liquids. And there's no after-fire mess to be cleaned up.

Wheeled Units, Portables, Built-in Systems —all types of Kidde equipment offer these same outstanding advantages. Ask a Kidde representative *which* type should be used to protect each of the fire hazards in the list below.

* * *

KIDDE KILLS TOUGH FIRES *in Process Rooms, Mixing Tanks, Agitators, Pump Rooms, Storage Areas, Drum-Filling Rooms, Motors, Transformers, and Electrical Control Panels.*

Walter Kidde & Company, Inc., 1227 Main Street, Belleville 9, New Jersey

K Kidde

The word "Kidde" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc.

Kidde

Powell AMPCO Alloy VALVES

pioneers again!

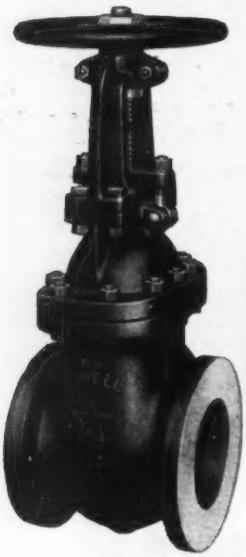
Ampco Alloys are a group of super long-wearing alloys of Aluminum Bronze developed exclusively by Ampco Metal, Inc.

The new POWELL Line of Ampco Alloy Valves are made from patterns of special design. These include Globe, Gate, Check, Y, Relief and Flush Bottom Tank Valves, Cocks and Liquid Level Gauges.

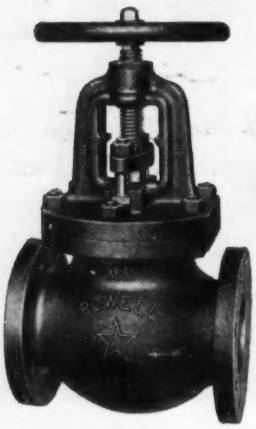
Ampco Alloys are especially valuable to the chemical and refining industries, not only for their corrosion resistant qualities, but because of their resistance to abrasion and their ability to withstand much higher temperatures than standard bronzes and brasses which have top temperature limits of about 500 F to 550 F. Also available are Powell Iron Body and Steel Valves in which the trim, or working parts, such as stems, seats, wedges and discs are made of Ampco Alloys.

Powell Engineers will be glad to advise you on applications of Ampco Alloy Valves. Special bulletin on request.

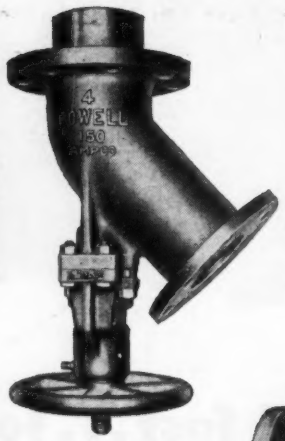
The Wm. Powell Co., Cincinnati 22, Ohio



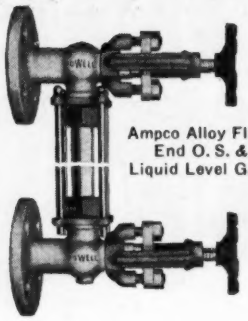
125-pound Iron Body Gate Valve with Ampco Alloy Trim.



125-pound Iron Body Globe Valve with Ampco Alloy Trim.



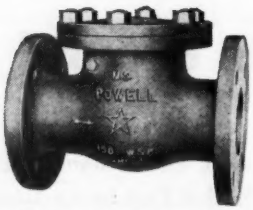
Ampco Alloy Flush Bottom Tank Valve.



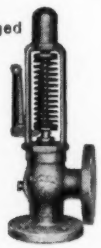
Ampco Alloy Flanged End O. S. & Y. Liquid Level Gauge.



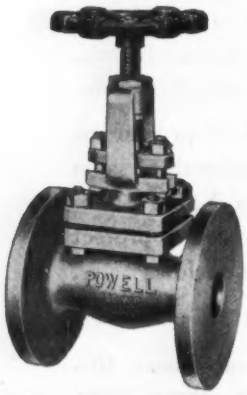
200-pound Ampco Alloy Screwed End Gate Valve.



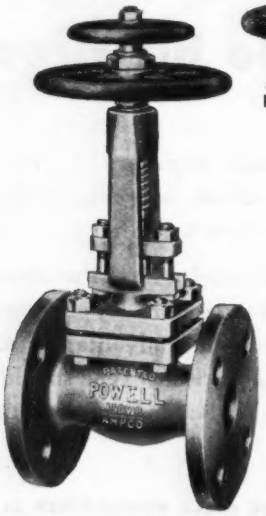
150-pound Ampco Alloy Swing Check Valve.



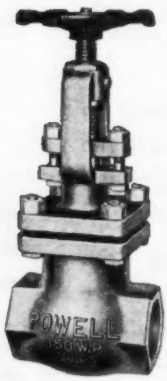
Ampco Alloy Flanged End Angle Relief Valve.



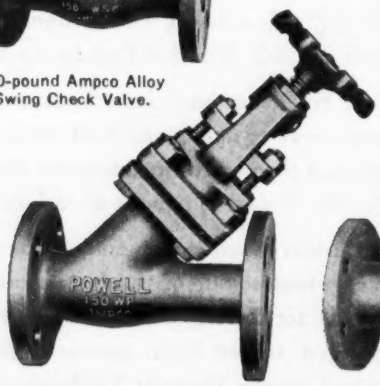
150-pound Ampco Alloy Flanged End O. S. & Y. Globe Valve.



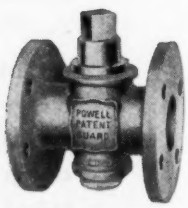
150-pound Ampco Alloy O. S. & Y. Globe Valve, equipped with Powell Patented Seat Wiper.



150-pound Ampco Alloy Screwed End O. S. & Y. Gate Valve.



150-pound Ampco Alloy Flanged End O. S. & Y. "Y" Valve.



Ampco Alloy Flanged End Ground Key Plug Cock.

POWELL VALVES

how chemistry's war-born progress affects



Never before have such profound changes taken place in chemical industry—with so few details generally publicized—as in the war years just passed.

New techniques, new materials, new equipment, whole new chemical industries have sprung into being. Much has happened which, for security reasons, could not be revealed until now.

Here is your opportunity to see and hear how peacetime applications of war-born changes may affect your plants, your markets, your profits. It's the 20th Exposition of Chemical Industries, which will be held at Grand Central Palace in New York City, February 25-March 2, 1946.

What you will see at the exhibits, what you can learn there by talking with exhibitors' technical representatives, may shape your thought and actions for months to come.

For every chemist, chemical engineer, and production head throughout industry, this year's Exposition is—more than ever before—a "must." No executive responsible for the future of any business depending on chemical process, in his own or customers' plants, can afford to pass it up.

Attendance will pay you well. Be there with your associates!

20TH EXPOSITION OF
CHEMICAL
INDUSTRIES
FEB. 25 - MAR. 2
GRAND CENTRAL PALACE
NEW YORK CITY

Ⓐ 507

Management of International Exposition Co.



Sign of the Times!

BICHROMATE OF SODA

Crystals — Granular

•

BICHROMATE OF POTASH

Crystals— Granular

"BUY CROW-MATES"

NATURAL PRODUCTS REFINING CO.

904 GARFIELD AVE., JERSEY CITY 5, N. J.



Toward Industrial Peace

by ROBERT L. TAYLOR, editor

ALTHOUGH IT HAS NOT HIT CHEMICALS as hard as some other industries, the mounting wave of labor unrest now sweeping the country is of as serious concern to chemical makers as it is to automobile and steel people. Labor disputes are no longer family or regional or even single industry affairs. A strike in one small plant can easily tie up or cripple a vast segment of the complex production and distribution machine that is American industry.

Thus chemical makers owe their best efforts both in spirit and action to assistance in the solution of this serious national problem. Labor and management must get on the same side of the table if the country is to escape destruction by the much more ruthless forces of unemployment and inflation.

It is not enough to dismiss the subject, as we are sometimes inclined to do, with the curt comment that labor—or management—is blind not to see that the best interests of both groups lie along the road of cooperation, of mutual striving for the goals of production and high employment. That fact is self-evident. Most workmen as well as representatives of management will agree to it without hesitation.

What, then, is the matter? What are the differences between the two groups? What can be done to resolve those differences, and how can chemical industry help?

Let us look at labor and at some of the things governing industry's relations with labor as they appear today. The picture we see is considerably different than that of a few years ago. Labor today is big. It is powerful. It is closely knit. It maintains its own large staffs of lawyers, economists, public relations officers, lobbyists, and other experts. Its services are in great demand. And on top of all this it is surrounded with protective legislation and favorable Supreme Court decisions that give it virtual immunity from any attempts to prosecute it under any of the Federal statutes designed to prevent abuse of economic power.

Labor leadership today, in other words, is at the wheel of a supercharged speedster sailing along a highway that has neither speed laws nor traffic officers. It is little wonder that the hue and cry from the back seat to "step on it" drowns out the timid voice of the more cautious who would prefer to get there slower but all in one piece, not to mention with less hazard to that innocent onlooker and pedestrian, the public.

The first step in alleviating the situation, then, must be to provide some speed laws, and it must be taken by government. There must be a revision of the Wagner Act that will specify unfair practices of unions as well as of companies. There must be provision for penalties and payment of damages in case of breach of contract by either side. In this respect many of the basic laws applying to corporations should also apply to unions. Labor and management must have equal status under the anti-trust laws and the National Labor Relations Act.

For labor to have immunity from all restrictive legislation invites abuse and excesses. Most labor leaders are under constant pressure from the more radical and vociferous elements of their membership to get more money and more concessions from management regardless of conditions. Wring out all we can while the getting is good, seems to be the rallying cry. Obviously a union business agent cannot ignore these demands. The means for satisfying them are at his disposal, and so he is virtually forced to do something regardless of his own judgment in the matter. It seems safe to say, therefore, that there are probably some union leaders today who would be glad to have legal backing to restrain their members, although they are in no position to say so.

Members of chemical industry can make a direct contribution to settlement of the current labor-management strife by urging Congress to pass new or revised legislation to set up some national standards of operation for unions. If we are to have industrial peace, labor legislation must be brought up to date.

But legislation is only one step in the real solution to the labor problem. It should be a big one as far as the current situation is concerned, and it is urgent, but it will be no cure-all. Progressive management and thinking labor leaders must continue unrelenting in their endeavor to bring the two groups closer together through the slower but more lasting process of education.

What a tremendous offensive these two powerful groups—industry and labor—could launch on unemployment, want, disease, and pestilence, which have replaced Germany and Japan as the principal enemies of American peace and happiness. The goal is one toward which chemical industry management might

well strive to take the lead, as it has done in other cases. It is fitting that the industry which has been a pioneer in providing better food, clothing, and shelter for modern man should also lead the way in promoting his happiness among his fellow men.

Technical Manpower Still Wanted

REFERENCE TO THE SHORTAGE of technical manpower has been made in so many places that further comment on the subject would add little more than emphasis. One current note, however, is the fact that release of men from war projects apparently is not providing the amount of relief anticipated, according to reports from industry.

In general, those chemists and chemical engineers who have been working on war jobs in private industry are back on civilian work, but in the majority of cases the actual jobs they were doing have not changed. The only change has been the destination of the product of their efforts, and as a group they have thus not added anything to the available supply of technical men.

What little alleviation of the situation there has been has come from release of some of the group comprised of civilian military employees that were working on such war projects as the Manhattan Project and the Radiation Laboratory at Massachusetts Institute of Technology. Even this group, however, largely made up of younger men, has been cut down by the action of Selective Service in drafting men under 26 despite the expressed opinion of the Secretary of War against this practice where the men concerned are technically trained. In this respect it is interesting to note that Secretary Patterson has stated that no further legislation is needed in order to defer technical men, as the matter can be handled under Selective Service. This is exactly the system under which the matter has *failed* to receive satisfactory handling.

The technically trained military personnel now awaiting release from the services constitute the largest, and probably the only large, immediate source of additional trained technical men. Those who have served in technical capacities in the army or navy would be particularly valuable to industry at this moment. Many such men now seem to have little more to do than sit and twiddle their thumbs while waiting for their discharge points to accumulate, despite provisions "whereby men may be discharged when it can be clearly shown that their services would be of more value to the national interest in civilian status than as soldiers." Perhaps industry may be partially at fault here for not putting forth greater effort to get these men.

The chemical industry today needs all the good technical men it can get. Efforts must be continued to impress upon the military the importance of the rapid release of that small but important group of chemists, engineers and physicists who are still in uniform. They are the creators, the job makers, that can do much to win the home front battle of production and employment that has supplanted the shooting war in demanding the nation's top attention.

Catch the Invisible Leaks

IN RESTORING SOME OF THE little economies and efficiencies in chemical plant operation that may have been passed up for lack of time during the war, production management will not want to overlook the less obvious but just as expensive invisible leaks such as friction losses and heat losses. If these can be ferreted out they frequently prove to be sources of sizable savings. In a well run plant there is no more justification for a misaligned shaft or a sparking motor or an inadequately lubricated bearing than there is for a leaky tank or a valve that won't close.

On Making the Product Fit the Need

RETURNING FROM A VISIT in Germany as an investigator for the Technical Industrial Intelligence Committee, J. R. Townsend, president of the American Society for Testing Materials, has drawn a comparison between German and American production philosophy that is worthy of notice by those engaged in serving American industry, whether it be with chemicals, equipment, or any other form of goods or services.

"The German designer," points out Mr. Townsend, "appears to think in terms of technological importance and is inclined to overcomplicate rather than simplify his designs. The American designer, on the other hand, tends to simplify and to view the design of his equipment in terms of available high-speed manufacturing methods."

Every indication is that this American trend toward mechanized production methods is still far from expended, despite impedimentary attempts by certain groups who believe that the way to increase employment is to put more hands on fewer jobs. More than ever the chemical maker in selling his products must take into consideration not only the time-honored elements of quality and purity, but such things as convenience and ease of handling, adaptability to mechanical application, and ease of storage in large quantities. Quality specifications are becoming more and more taken for granted by buyers of chemicals. With increasing frequency one manufacturer's product is being favored over another of equal quality because it is freer flowing, or it works better in the tableting machine, or it doesn't foul up the feeder, or it goes into solution quicker.

These little extras in a chemical may on occasion look like expensive frills of doubtful value. Sometimes they are. But in many other cases they are simply realistic recognition of a customer need, a need that is consistent with modern American methods of mechanical handling and automatic operation. Some chemical manufacturers, in their emphasis on quality, seem inclined to minimize or overlook this.



Large amounts of Stauffer chemicals are consumed in every conceivable industry. While the glass and ceramics industry has grown to tremendous proportions, Stauffer has kept pace—supplying increasing quantities of such dependable chemicals as Borax, Boric Acid, Nitrate of Potash, Caustic Soda, Sulphur, and other chemicals.

OTHER STAUFFER CHEMICALS

*Aluminum Sulphate	*Copperas	Silicon Tetrachloride	Sulphur Chloride
Carbon Bisulphide	Cream of Tartar	Sodium Hydrosulphide	*Superphosphate
Carbon Tetrachloride	Muriatic Acid	Stripper, Textile	Tartar Emetic
Chlorine	Nitric Acid	Sulphuric Acid	Tartaric Acid
Citric Acid			Titanium Tetrachloride

*(*Items marked with star are sold on West Coast only.)*

STAUFFER CHEMICAL COMPANY

420 Lexington Avenue, New York 17, N. Y.
221 N. LaSalle St., Chicago 1, Illinois.
424 Ohio Bldg., Akron 8, O.—Orlando, Fla.
555 South Flower St., Los Angeles 13, Cal.
636 California Street, San Francisco 8, Cal.
North Portland, Oregon — Houston 2, Texas

STAUFFER

When COST is a FACTOR... *try*

ISOPROPYLAMINE

$CH_3CH(NH_2)CH_3$

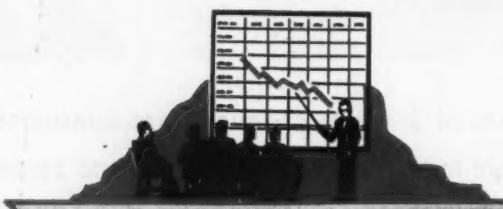
Look into the possibilities of using this low cost primary aliphatic amine

ISOPROPYLAMINE undergoes all the usual reactions of primary aliphatic amines . . . and exhibits many of the solvent characteristics of ammonia.

USES: Isopropylamine may be used advantageously as a solvent, a reaction medium . . . or as a raw material for the synthesis of such materials as dyestuffs, pharmaceuticals, insecticides, bactericides, photographic chemicals, textile specialties, rubber chemicals, and surface-active agents.

Isopropylamine is available as a liquid containing 98%-100% amine, and also as an aqueous solution containing 50%-54% amine. Anhydrous Isopropylamine offers a distinct advantage over lower aliphatic amines, because it is supplied in drums instead of pressure cylinders.

Offered at a lower price than other primary aliphatic amines, limited commercial quantities are now available. Let our Technical Service Division help you adapt Isopropylamine to your particular application.



PROPERTIES OF ISOPROPYLAMINE
(98%-100% Amine)

Molecular Weight		59.11
Boiling Point, °C		31.9
Melting Point, °C		−101.2
Flash Point, Tag Open Cup		
°C		−26
°F		−15
Specific Gravity, 25°C/4°C		0.686
Refractive Index, 20°C		1.3763
Ionization Constant		K=5.3 x 10-4
pH of 0.1 Molar Aqueous Solution		11.57
Color		Water White
Vapor Pressure	Temp. °C	mm Hg
	10	308
	20	478
	30	718
	40	1030
	50	1500
Solubility . . .	Miscible with water, alcohol, and ether	

Chemical Industries
DECEMBER, 1945

THE NEW THREAT OF INCREASED COSTS

And What It Means to Producers of Chemicals

by ROLAND P. SOULE, Vice-President
American Machine & Foundry Co., New York, N. Y.

CHEMICAL INDUSTRY in the past has benefited from the urge for economy. Now new economic dislocations are being created which may present profit-making opportunities to the nimble, or profit-destroying threats to the slow-footed. The author, a chemical engineer and economist, is well known for his keen analyses of economic trends within and affecting the industry.

THE CHEMICAL industry has always thrived on change. It regards it as nothing new. Today, however, chemical manufacturers are up against some kinds of change that they have not had to face seriously before. They are no longer dealing largely with self-initiated research and technological changes that they can keep under some measure of control and peddle at their leisure. They are dealing more than ever with economic changes of a powerful and uncontrollable type—changes which may at first appear as opportunities to be capitalized but which have a way of turning unexpectedly into hazards of the most serious nature.

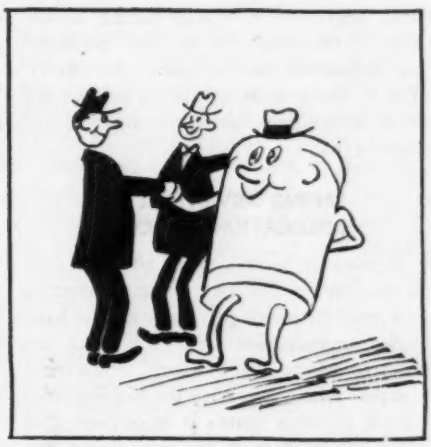
This article is principally concerned with economic changes of this latter type, most of which fall in the category of increased costs in all types of business.

Their most conspicuous manifestation at present, of course, is rising wages. Now rising wages are no new phenomenon. We have seen wages in a rising trend throughout most of chemical industrial history, and it is a trend we have been glad to see. We have also been accustomed to see prices stay the same or even decline while wages were rising, so that the present divergent movement of wage rates and prices is also no new phenomenon.

What is new is not the picture of rising wages against a background of unchanged prices, but the origin and the speed of the rise. In recent years wage increases have been due less and less to management and more and more to organized labor. And the rate of increase of wages has no longer been determined by the rate of introduction of more efficient methods but has outrun labor's ever-growing capacity to produce. In the past rising wages have always been accompanied by one of two possible companions—rising productivity or rising prices. Now we see it teamed with neither, but hitched by fiat to rigid prices.

For the moment let us not question the right or wrong of it. Let's not ask whether it is good or bad for industry, good or bad for agriculture, good or bad for the country as a whole, or even good or bad for labor itself. Let's just accept the continuation of wage increases as a probable fact and ask ourselves what it can mean to industry as a whole, and to chemical industry in particular.

Now if the present administration has any labor policy, quantitatively speaking, it is the one voiced by President Truman last summer when he said he was in favor of all wage increases that do not necessitate higher prices. Politically speaking, of course, this is a most beguiling formula. So long as manufacturers earn what may be described as a "reasonable" profit, labor is permitted to demand higher wages without proof of higher productivity. Also, so long as the normal result of increased wages without increased productivity can be avoided by means of price controls, the consumer is not made to suffer. And finally, so long as the country's volume of production remains buttressed by the great unfilled demand for consumer goods resulting from the war, and so long as income taxes continue to fall, manufacturing profits are likely to stay in a range that government can call "reasonable."



It seems safe to predict that in the future a smaller proportion of the country's total research effort will be upon adaptation, that is, the forcing of a given material into a given market whether it has the inherent right to be there or not. There is reason to believe that more attention will be paid to a new type of technology . . . that can best be described as functional engineering.

Based on a paper "Rising Wages and Market Research," presented before the Chemical Market Research Association, New York City, Oct. 18, 1945

If all this sounds very academic please note that in actual practice company after company has been granting higher wages. Please note also that they have been raising prices very little if at all. And, finally, please note the recent action of the stock market. Instead of nose-diving at the threat of disappearing profits, the market has soared to a new eight-year high. Surely it must be admitted that the arguments in favor of this wage-price formula are most persuasive—so persuasive, in fact, that there seems little likelihood of any really fundamental change of political ideology on the subject in the very near future.

Here, then, is likely to be the picture for some time to come: wages will continue to rise more rapidly than productivity, and prices will continue to remain fixed or will lag well behind the rise in wages. What will it mean to chemical manufacturers? What economic dislocations are being created which may present profit-making opportunities to the nimble, or may offer profit-destroying threats to the slow-footed?

Let's look at it from two points of view: first, aggressively, that is taking advantage of the other fellow's new problems and difficulties; and secondly, defensively, that is, doing what we can to prevent the other fellow from taking too much advantage of us.

TAKING ADVANTAGE OF DISLOCATIONS OF COST

If you care to look at the situation only in this hard-boiled way, those prospective new markets which perhaps you now have under investigation will look most attractive where the products which may compete with yours have the highest component of labor costs. It is obvious that while all labor costs are now rising, the impact of this rise does not fall with equal weight upon every industry. Thus, the ratio of labor costs to material costs varies widely from industry to industry. Chemical processing, for example, has relatively high material and low labor costs while mechanical fabrication has low material and high labor costs. Thus, certain products molded from plastics may well enjoy a new competitive advantage over similar products fabricated from metal if the price per pound of the plastic remains about the same while the hourly rates for machinists rise sharply.

This different ratio of labor to material costs is going to upset many old relationships. The cost of railroad transportation, heavily weighted by labor, will rise faster than that of air transportation. The cost of coal, heavily weighted by labor, will rise faster than that of fuel oil. And the cost of steel, heavily weighted by labor, will rise faster than that of aluminum or magnesium which, weighted largely by fixed charges and power, may even decline. In a world where competitive costs are thus so rapidly changing, some worthwhile profits may be earned by those who think the soonest and move the fastest.

From the defensive point of view, on the other hand, let's see what forces are being set in motion that may do us harm. How is management reacting to these rapidly rising wages, and how will this reaction affect existing markets?

THE PRESSURE FOR SAVINGS IN LABOR

The first reaction to higher costs is, of course, to try to introduce new offsetting economies. Its logical goal is to increase the productivity of labor to the point where the new high level of wages will be economically justified. Obviously, therefore, the first move of industry will be in the direction of more and better labor-saving machinery.

But there is a very distinct limit to what can be accomplished at the present time. We have been installing labor-saving machinery ever since the days of the industrial revolution and we have come a long way down this particular road. Thus, the industries that already are very highly mechanized can do relatively little more. Look, for example, at the tobacco industry, which has been manufacturing cigarettes by machines since the 'eighties. Cigarettes now retail, before state taxes, at $7.50 a thousand, and wholesale, before federal taxes, at about $2.50 a thousand. When made in the average type of machines, the total labor cost is less than 10 cents per thousand. The tobacco itself represents the principal cost, and being an agricultural commodity, has soared in price. If management in this industry sought to replace existing machines by much faster ones, and to offset rising costs by still further savings in labor, it would find relatively little to gain by economies at the expense of this last small remnant of labor.

Where we must look for most new applications of labor-saving machinery in the future, therefore, is not in the industries that have long employed skilled and high-priced labor. They already are well mechanized. We must rather look more in the industries that have been employing unskilled and semi-skilled labor but are now paying, or must soon pay, the wages skilled labor was paid before the war.

THE PRESSURE FOR SAVINGS IN MATERIALS

But, like the tobacco industry, many manufacturers already have mechanized their operations to a high degree, and hence may be unable to make further important savings by way of labor-saving machinery. Where are they going to look for the economies that will offset, at least in part, their higher labor costs? They are obviously going to scrutinize their raw material bill more closely than ever before. They are going to attempt to use less of the materials they are now using, or to use some other material that either is cheaper or is better at the same price.

Again citing the tobacco industry as an example, I may point out that while a cigarette machine requires comparatively little labor for its operation, it handles a very impressive dollar value of tobacco, particularly at present prices. Accordingly, if we can so change the handling of the tobacco as to make a net saving of less than 2 per cent of the material now required, we can accomplish the equivalent in cost reduction of inventing a fully automatic machine requiring no labor at all. Hence we are changing the emphasis of our developmental work in cigarette manufacture away from labor saving into material saving. And I believe this is a very important trend that you are going to observe more and more in the industries which are already highly mechanized.

This trend towards the more economical utilization of materials is by no means new, and has long been in evidence in one degree or another. It has resulted from improved designs, less waste in manufacture, greater recovery of scrap materials, and the better protection of finished products against rust, fire, decay and mechanical wear. Durable goods have become more durable, and non-durable goods less non-durable. Consequently, every time the Federal Research Board Index returns to a given level of production, we find that fewer tons of materials of all sorts are required to support that level. And, with the greatly increased pressure from rising wages and other costs, we shall probably see still fewer tons in the future.

THE CHEMICAL INDUSTRY: MEETING THE NEW THREAT

To a considerable extent, of course, the chemical industry in the past has benefited from this urge for economy. Thus, chemicals helped to make possible the greater recovery of scrap and waste materials. And chemicals helped to give other materials greater protection from rust, fire, decay and mechanical wear. But the direction of the greatest growth of the chemical industry in more recent years has been away from refining agents and protective materials sold by the pound and toward completely finished products sold by the ton. Thus, where once in the textile industry we had only dyes, we now have rayon and nylon. Where once in the rubber industry we had only vulcanization accelerators and anti-oxidants, we now have the finished tires themselves. And where once in the fabricating art we had only paints and varnishes, we now have plastics and other materials of construction.

The time is coming when the chemical industry can no longer grow, irrespective of the growth or decline of other producers of raw materials. It must more and more share with the lumbermen, the metal miners and all other producers of basic materials a vulnerability that cannot be es-

caped. It is the vulnerability to the implacable and accelerating trend toward the increasing economy of utilization of the products which they make.

This rising thrift in the use of materials is in part the result of another industrial trend, which is presenting new problems in executive policy. It is the changing position, technologically speaking, of the consumer relative to the producer. Research in the future is going to work more for the consumer and less for the producer of materials. Recall, if you will, that research to date has been pretty much in the hands of the big companies and that the big companies have been mostly the primary producers and refiners of materials of all sorts. The objective of such research has been to force a maximum of nickel, of aluminum, of copper, of gypsum, of asbestos, of plastics, etc., into as many different markets as possible. It has been a technology of adaptation and its success has been measured by the tonnage of materials sold by the companies financing that research.



We shall see fewer products made largely of metal, wood, paper, textiles, plastics, or any single material. We shall see in their place many more artilcles representing combinations of such materials in which each material serves best its own particular function in a way that lowers the net cost of the final product at no sacrifice of quality. In short, we may witness some important industrial weddings.

It doesn't require much imagination to realize, however, that only through coincidence would the products resulting from such research happen also to be the most suitable for the purpose in question. How many would admit, for example, that the best roofing, the best wallboard, and the best flooring that we can buy today are really the best that can be designed? Suppose, for example, that you were not committed to use some one material in large part but had complete freedom to select in type or quantity any material or combination of materials that best fitted your purpose. Then, isn't it only reasonable to believe that you could produce something representing a better compromise of cost and performance than the best now offered in the market today?

It seems safe to predict, therefore, that in the future a smaller proportion of the country's total research effort will be upon adaptation, that is, the forcing of a given material into a given market whether it has the inherent right to be there or not. There is reason to believe, on the other hand, that more attention will be paid to a new type of technology. Such technology takes the customer's point of view and can best be described as functional engineering. Research of this type is most willingly financed by companies that own no mines and no quarries, that have little or no stake in specific commodities, and that hence can be more objective in their choice of materials.

Functional engineering is almost always characterized by an increased emphasis upon the principle of composite construction. When it is practiced more widely, we shall see fewer products made largely of metal, wood, paper, textiles, plastics, or of any single material alone. We shall see in their place many more articles representing combinations of such materials in which each material serves best its own particular function in a way that lowers the net cost of the final product at no sacrifice of quality. In short, we may witness some important industrial weddings such as textiles and plastics, plywood and stainless steel, and paper and synthetic resins.

Here, then, is a possible method for the chemical manufacturer to satisfy his customer's interest in new economies. Here is a way whereby his chemical product, despite its relatively high price per pound, may still produce some over-all savings in the customer's raw material bill. The indicated procedure is to marry the chemical to some other product with a very low cost per pound and thus to yield a composite product either better or cheaper than may already be available. The only catch, of course, is that the chemical manufacturer may have to resort to his shotgun, so to speak, in order to bring about such a wedding. In other words, the desired composite product may never be made if the initiative is left to existing fabricators, and if these fabricators have insufficient technical skill or inadequate financial resources. This will pose an increasingly difficult problem in executive policy. To what extent should the chemical manufacturer enter the fabricating field and risk competing with some of his existing customers in order to make products that otherwise might not be made? Will his net profits be increased or decreased by such an action? And what will happen to his profits if he fails to take any action at all?

THE BROADER PROBLEM

What has been said thus far bears chiefly on the short-run aspects of the subject. It assumes that we accept without question this trend toward higher and higher wages, that we take what advantage of it we can for the present best interests of our companies and that we guard as best we can against its immediate ill effects. It assumes that we follow a policy of temporary expediency, whether or not such a policy falls far short of meeting the fundamental issues or strikes at the heart of the real problem now presented by rising wages.

You are aware, I am sure, of the long-run consequences of such a policy of expediency. Management will feel impelled, by virtue of its responsibility to its stockholders, to meet rising costs by the introduction of labor-saving machinery wherever possible, regardless of any increased unemployment which may result. Similarly, management will not concern itself, as it switches from one material to another in search of all possible new economies, whether it is robbing Peter to pay Paul, or whether by consuming less materials of all sorts it is further adding to the number of unemployed.

Let's face the facts squarely. We are for the most part a group of men—some technically trained, some not—who are trying to turn new technological and economic developments into profit. If we were asked to describe our function to society we might describe it, rather virtuously, as the production of better and cheaper goods and services. But it would be an equally accurate picture of our function if we described it as the development of new machinery and methods for the more efficient utilization of men and materials. How then can we reconcile the social virtue of creating cheaper goods with the social evil of destroying jobs?

THE NECESSITY OF GROWTH

The one thing that can bring about this reconciliation, the one and only possible tie that can link increasing efficiency with increasing employment, is increasing production. Once we regard the employment problem as a production problem, the basic

principle becomes so obvious as to be axiomatic. If we are always to have full employment in our competitive form of economy, we must always have growth. If we are to continue to let loose the forces of technology and to encourage the development of labor-saving and material-saving procedures, we must continue to expand our total production of goods. And the faster we introduce new economies, the faster we must raise our output. If we fail to keep production in step with technology, the result is inevitable. Our increasingly efficient economy will throw out each year increasingly large quantities of superfluous labor, and the pool of unemployed will steadily expand.

It follows, therefore, that a condition of normal business in this country is a condition of growing business. The alternative to growth is not stability; it is depression. A competitive economy is like an airplane in flight. It is sustained only by its forward movement. If its engines fail, if it goes into a stall, it is bound to fall helplessly to earth.

You have merely to examine the makeup of our industrial structure to see how inescapably our economy is tied to growth. Only about 55 per cent of our manufacturing output in normal times of prosperity is in non-durable goods: clothing, food, gasoline, tobacco, and other consumer goods used for routine day-to-day purposes. The remaining 45 per cent is in durable manufactures: steel, lumber, machinery, equipment, and other capital goods used for the improvement and expansion of our industrial life. The division of employment is also about the same, with nearly half of our factory workers engaged in the manufacture of these durable goods. It is this important group, together with the millions of construction workers in the field, that must bear the brunt of employment whenever the advance of our economy is arrested, whether temporarily in a time of depression, or at greater length in a period of declining growth.

The only sound answer to all our problems—to price control as well as to employment—is to open up the throttle and to increase production. The only sound way of absorbing excessive purchasing power is by boosting production. And the only sound and lasting way of creating new jobs in the face of technology's continuous efforts to get along with fewer workers and less materials is to keep production always trending upward.

REMOVING THE OBSTACLES TO PRODUCTION

It is obvious that if we could turn the curve of production upward, we would greatly simplify our other problems. We would no longer be struggling for sales gains that simply represent larger and larger slices of a smaller and smaller pie. We would no longer be forced to rely so heavily on carving something out of the other fellow's territory in order to make additions to our own. Given a steadily increasing production per capita, we should then be engaged in the stimulating and soul-satisfying job of raising the national standard of living.

But how can we bring about this much-to-be-desired increase in production? This is the "sixty-four dollar" question, and it is by far the most important of any I have discussed here. The answer is simple in principle, however difficult it may be in practical application. A truly competitive form of economy, with all of its normal incentives in active operation, will automatically result in increased production. It may produce hardships that need to be softened, it may produce inequities



The one acid test to which we should subject every act of congress, every act of labor, and every act of management is this: will it speed up or slow down total production?

that need to be adjusted, and it may produce casualties that need to be cared for. But the experience of this country from its earliest until its most recent years has proved conclusively that with all its recognized faults, a system of free enterprise, when properly rewarded, always stimulates industrial growth.

The urge for increased production is already present in our existing economic engine, therefore, and does not need to be created. What is most essential is the removal of the obstacles that have been put in its path. We need not add more fuel to the fire. All that we have to do is to open wide the throttle. The one acid test, therefore, to which we should subject every act of Congress, every act of labor, and every act of management is this: will it speed up or slow down total production?

Apply this test to price controls. With costs rising and profit margins disappearing, will output be raised?

Apply this test to taxes. If a manufacturing company has to continue to pay to the government the lion's share of all profits earned over and above the pre-war level, will it build new plants and expand into new markets?

And apply this test to wage rates. If wage increases are granted while labor productivity stays the same, will the higher costs of manufacture result in increased sales?

THE ATTITUDE OF LABOR

Now labor today is saying "yes" to this last question. It is arguing that higher wages mean greater purchasing power, and that greater purchasing power means prosperity. It is overlooking the obvious fact that when a system of free enterprise works normally, high wages are a by-product and not a cause of economic progress. The cause is increased manufacturing efficiencies, brought about by improvements in processes, materials and machines. If the real purchasing power of the worker is to be permanently raised —as we earnestly hope will be the case— the only sound approach is technological, i.e., the devising of new and better methods of production whereby we can all work less and still have more.

Higher wages without higher productivity do not increase the national standard of living. They do not add to the national wealth. They only transfer wealth from one group to the other. They take from the salaried worker, from the farmer, and from the self-employed, and they give to the factory employee. And among the wage earners, they take from those who lose their jobs to new machines, and they give to those who win the higher pay.

We can readily understand and forgive the average worker if he fails to see the picture whole and thinks only in terms of his family and himself. In our complicated and elastic economy, effects do not always follow promptly on the heels of cause. As a nation we do not always live within our income, and we not only borrow from the past but, all too often, we also mortgage the future. As a result, the short-run good is not quickly stifled by the long-run evil, and the worker sees only benefits from higher wages and shorter hours, by whatever means obtained. He is sitting in the driver's seat and is driving hard—just as management once did when it had equal power.

The only final answer, of course, is education in economic thinking by both management and labor, and training by both in self-restraint in the application of economic power. It will be a long road and a tough one, and things may well get worse before they get better. But let us pin our faith in education. Education of ourselves, of our companies, of our Congressmen, and of our labor unions. While we must not hope for too much from the union member, we can look to the union official for both a broader perspective and a more enlightened viewpoint. Given the courage to face the facts and the wisdom to act not as demagogues but as statesmen, our labor leaders are in a position not only to advance their own cause but to strike the strongest possible blow on behalf of both the spiritual and material progress of this country.

Technical Investigation in Germany in World War II

by DONALD B. KEYES, Director
Office of Production Research and Development, Washington, D. C.

THE STATUS of German industry at the end of World War II is a matter of great interest to all. Here Dr. Keyes, who was instrumental in setting up the chemical group, gives a brief history of the progress of these investigations.

AT THE END of the first World War there was pratically no investigation of German industrial processes until after the records were destroyed or hidden, and it was impossible to obtain anything without a business agreement. As a result, certain companies in the United States were able to make satisfactory arrangements for the purchase of such technical information, but the industry as a whole did not benefit. The results of this procedure were felt to be an error which should be avoided at the end of World War II by setting up a means of collecting and disseminating valuable enemy technical information for the benefit of American industry.

ORGANIZATION

After much agitation pressure was brought to bear on the General Staff and the matter was turned over to the Joint Intelligence Committee of the Joint Chiefs of Staff. As a result the Technical Industrial Intelligence Committee was formed a little over a year ago. The committee was given the privilege of coordinating all technical investigations for the United States in Germany with neither funds nor authority. This committee consisted of eight members, one from four military groups: Army Intelligence, Navy Intelligence, Air Force Intelligence, and the Office of Strategic Services, and one each from four civilian groups: Foreign Economic Administration, War Production Board, Office of Scientific Research and Development, and the State Department. Through the chairman, Howland Sargeant of the Foreign Economic Administration, this committee eventually acquired not only authority but money, the budget of the Foreign Economic Administration supplying the latter until special funds could be obtained for this purpose.

On this side of the Atlantic the organization consisted of Mr. Sargeant, the secretariat, and 19 sub-committees covering all industry, the members of which were drawn from government agencies, chiefly the War Production Board and the army, who had individuals directly connected with the War Production Board. The targets and the investigators were selected by these committees. On the other side, Mr. Sargeant and his co-workers created what is now a very excellent organization headed by George Powell.

It should be relized that until recently there was no coordinating group in Europe to control the various technical missions which at one time consisted of about 1500 different investigators. Also it has only been recently that the Army has supplied the facilities for these investigations. Through the kindness largely of the Army Technical Mission, TIIC operators were permitted to go to the target. Approximately 450 investigators, many of them with national and international reputations, have gone over for this organization and literally thousands of reports have been made, many of them under very difficult conditions.

DISTRIBUTION OF INFORMATION

Collected material is worthless unless properly distributed. Thanks to Chairman Krug of the War Production Board it was found possible to create what was known as the Enemy Technical Reports Committee of the WPB, which took the responsibility of accepting unclassified summary reports from TIIC investigators and distributing them to industry. Their main thought was to have them released for publication in order to obtain the widest possible distribution. After months of argument with the help of American industry the matter was brought to the attention of the President, and Mr. Truman issued a special directive for the declassification and distribution of these reports through the Department of Commerce. The man in charge of this work is John C. Green, formerly chef engineer of the National Inventors' Council. This is a gigantic task, not only the distribution of the reports from the American investigators but also the distribution of microfilm and photostats of valuable German documents, of which there are literally hundreds and perhaps thousands of tons already collected on the Continent, in England, and in the United States. Attempts are now being made to review this material and select the portion of value to American industry. Mr. Green's office is making copies of such material available as it is cleared for release.

PRESENT STATUS

TIIC, like many of our war agencies, has been liquidated and its place taken by a line organization known as the Technical Industrial Branch of the Joint Intelligence Objectives Agency. This agency, another creation of the Joint Intelligence Committee of the Joint Chiefs of Staff, handles not only technical intelligence but also economic and political intelligence in Germany. The military director is Colonel Gruhan and the civilian deputy, Howland Sargeant, chairman of the original Technical Industrial Intelligence Committee. The 19 sub-committees have been replaced by 19 individuals selected from the permanent government agencies in Washington. The Foreign Economic Administration is still supplying the money for technical industrial intelligence.

The European set-up has also been changed. It no longer operates through the Combined Intelligence Objectives Subcommittee, which has been liquidated, but is the Industrial Division of the Field Information Agencies, Technical, commonly known as FIAT, a group set up some months ago to coordinate our non-military technical intelligence in Germany. This latter agency used to be combined with the British, but now operates under the American theater commander. At the present moment this Industrial Branch includes about 150 investigators plus 100 staff members, executives, clerks, secretaries, etc., in London and on the Continent. It is pleasant to relate that at last the Army has supplied these investigators with adequate facilities.

SUMMARY

Summing up the activities of technical intelligence it could be said without fear of contradiction that the men have done a truly wonderful job and the results now being made available are such that the industrial world will soon appreciate what has been accomplished. It would seem that detailed investigation could be profitably continued for some time, as it is the detail that has been found to be important. It isn't often that an entirely new process discovered in Germany can be used as such in this country. On the other hand, it is very rare that a detailed investigation of some new development doesn't disclose certain features that can be applied effectively to other processes in the United States.

The above article is an abstract of a talk given by Dr. Keyes, now vice-president of the Heyden Chemical Co., at the Honor Scroll Meeting of the American Institute of Chemists, Chicago Chapter on October 26, 1945.

New Techniques Improve TNT Manufacture

by PHILIP J. RAIFSNIDER, Process Specialist,
Plum Brook Ordnance Works, Sandusky, Ohio

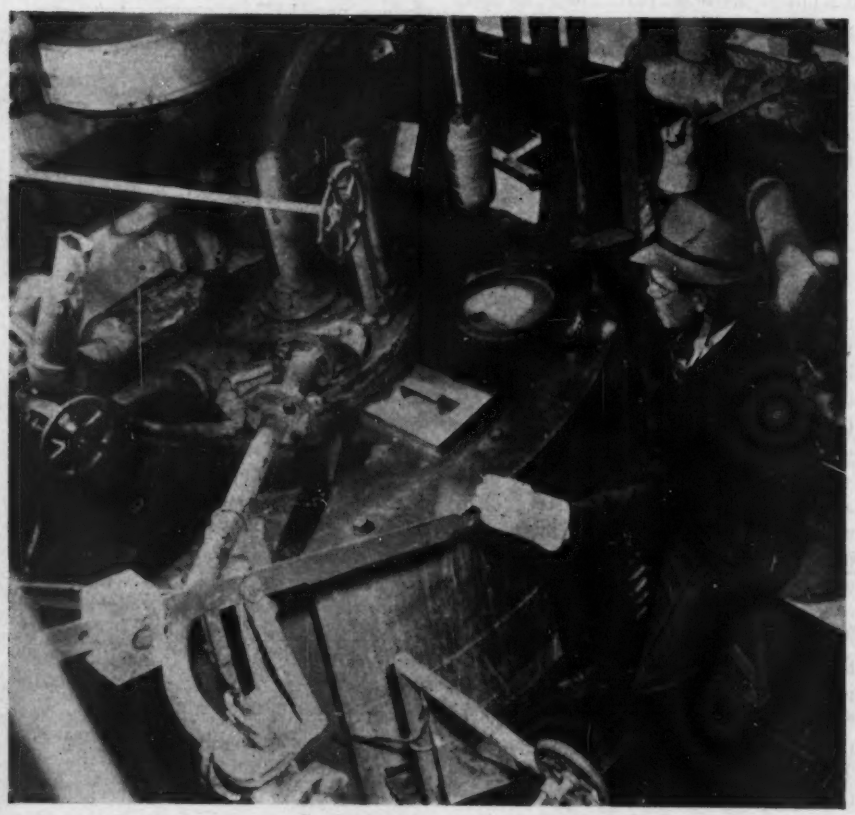
(Illustrations Courtesy Ordnance Department, Bureau of Public Relations)

IN SPITE OF THE ATOMIC BOMB, rocket propellants, and the host of new weapons designed for our military might, TNT was still the keystone of our high explosives program. The ingenuity shown by our technical men in providing the vast quantities needed was an important factor in our victory.

THE ONSET of World War II found our government lacking the facilities to produce the tremendous quantities of high explosives needed to fight a modern war. This was especially true in regard to the manufacture of TNT, the backbone of any high explosive production program.

Fortunately, our entry into the war did not find us totally unprepared. The summer of 1941 saw the frenzied construction of several large TNT manufacturing plants modeled after the Du Pont Experimental Plant at Barksdale, Wisconsin. By December 7, several plants were in partial operation producing a small quantity of TNT. The trickle soon became a torrent, keeping pace with the constantly increasing demand. Large production was immediately necessary, for only small quantities were in storage at the start of hostilities.

Commercial TNT is a refined product containing more than 99% of 2, 4, 6-trinitrotoluene, meeting a setting point specification of 80.2° C. or higher. Pure 2, 4, 6-trinitrotoluene has a setting point of 81° C., and the presence of approximately 1% of various isomers and dinitrotoluene results in the lowering of the setting point to an average of 80.30° in the commercial product.



Operator controlling mono nitration acid feed by operating "deadman" valve with left hand, at the same time regulating cooling coil water to control temperature with right hand.

MANUFACTURE

A typical manufacturing line at the start of the war consisted of a mono-nitration house, spent acid fortifier house, bi- and tri-nitration house, wash house, nailing and banding house, and a fume and acid recovery. The nitration to trinitrotoluene was accomplished in three stages using the fortified (with 60% nitric) waste from the preceding nitration. Thus the tri-nitration was the only nitration using manufactured (synthetic) acids.

The crude liquid trinitrotoluene was purified using the sellite method in the following manner: The tri oil was first washed several times with hot water, removing acid and the water-soluble impurities (tetranitromethane and trinitrobenzene). After the final wash water was drained off, the charge was crystallized under water and a solution of acidic sellite added, which consisted of 16% Na_2SO_3 and 0.5% $NaHSO_3$. The sellite reacted preferentially with unsymmetrical TNT, producing the water-soluble sodium dinitrosulfonates. The resulting slurry was then filtered, washed, remelted, dried, and then either flaked or grained. The final product was weighed, 50 lbs. per box, and nailed or banded before shipping.

The waste acid from the mono nitration was sent to the fume and acid recovery, where it was denitrated. The resulting nitric acid produced was used to fortify the bi-waste, and acid from ammonia oxidation was used to fortify the tri waste. The sulfuric acid remaining after denitrification was concentrated to 98% for oleum manufacture.

At Plum Brook Ordnance Works, Sandusky, Ohio, the initial cycle was two hours and ten minutes. In other words, every two hours and ten minutes saw a charge of approximately 3,300 pounds being flaked out. On a three-shift basis, this meant a daily production of about 36,300 pounds per line. At the close of the war, the time cycle at P. B. O. W. had been cut to 40 minutes. This gave a daily production of 118,000 pounds per line per day, barring lost time from mechanical failures. This production increase

was general throughout the industry and meant a substantial lowering of the cost per pound of TNT. Even more important, it allowed higher production quotas to compensate for a decreasing labor supply. The methods used in accomplishing this reduction of the time cycle provide an interesting story.

CUTTING CYCLE TIME

The first important bottleneck to break before TNT manufacture could be speeded up was the almost complete lack of trained explosives operators. This was solved at P. B. O. W. by having several groups of employees trained at the Kankakee Ordnance Works, then operated by Du Pont. Upon their return, these men formed the nucleus for training additional operators. After several months' experience, most men became competent operators. Supervision was supplied in the main by having a number of young chemists and chemical engineers trained, in theoretical knowledge, in government-sponsored courses, and, in actual practice, by apprenticeship at Kankakee Ordnance Works.

With the added operational skill developed in several months' time, the cycle was dropped to one hour and thirty minutes. This stepped up the maximum production from 36,000 pounds to 53,000 pounds per line per day. This decrease in operating time was accomplished without any major equipment changes and resulted from the shortening of excessively long cooking, settling, and separation periods in the three nitrations.

After operating on the hour and a half cycle for some time, it became apparent that no further major reductions could be made without drastic changes in process and equipment.

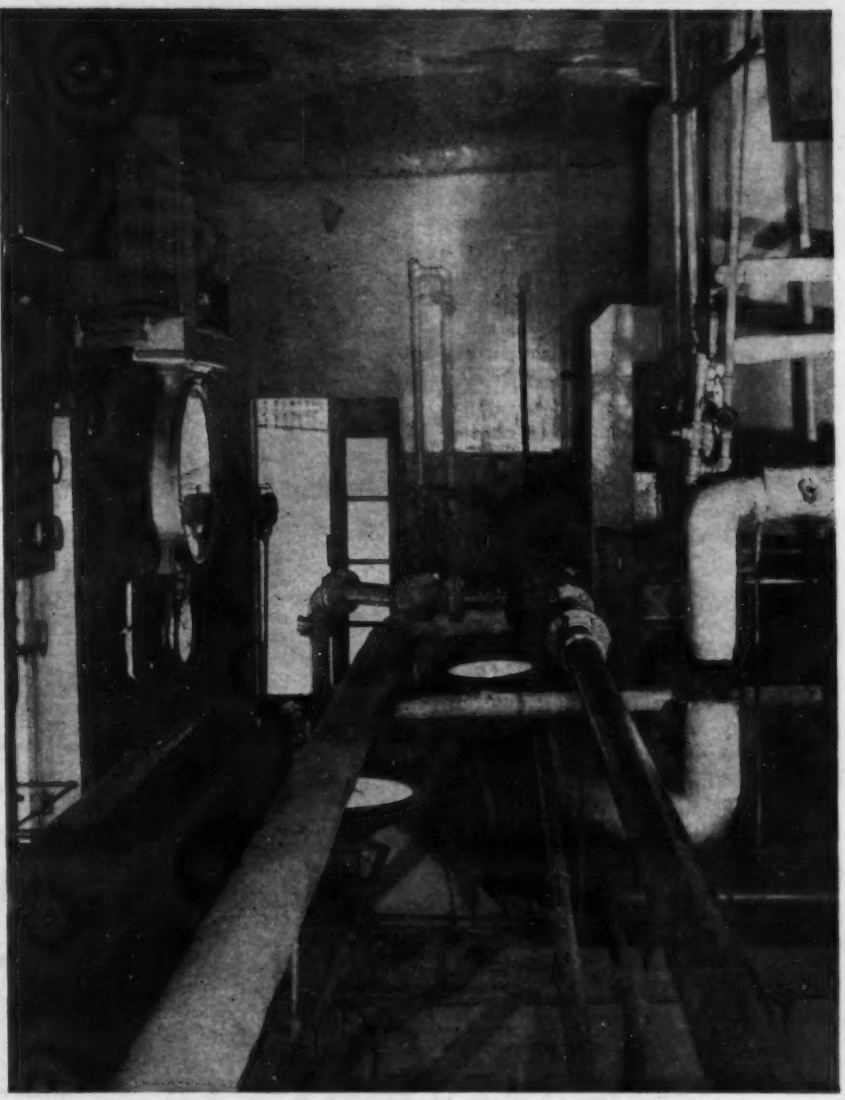
The chief bottleneck was in the tri nitration. In the indirect method, the acid was added gradually to the entire amount of bi oil. This addition was made in two parts. First the entire amount of fuming sulfuric (oleum) was slowly run in and then the tri mix (anhydrous mixture of 50% H_2SO_4 and 50% HNO_3) gradually added. At the initial addition of the tri mix, considerable heat was evolved and the entire charge began to foam. This foam persisted throughout half the addition of the tri mix, and a too rapid addition usually caused a charge to foam over with the temperature out of control. The material then had to be dropped immediately into the drowning tub to avoid possible fire or explosion. The difficulty experienced in these tri nitrations substantiated the conviction that major equipment and process changes were necessary to effect a further reduction of the time cycle.

The major change that led to faster cycles was the introduction of a different procedure for nitration of the toluene. It consisted of changing the three nitrations from the indirect to the direct method. This meant that the organic material to be nitrated was added to the entire charge of acid using strong downward agitation. Consequently, a small amount of nitratable material in relation to nitrating acid was present at any one time. The thorough mixing gave nearly complete nitration in the mono and bi stages at the end of the oil additions. Although it was still necessary in the tri nitration to cook the material for a period after the bi oil was all added, this method eliminated dangerous foaming and shortened considerably the total nitration period. The temperature control was far easier to maintain since the nitrations were practically complete at any given time during the admixture of the oil. Any excessive temperature rise could be readily checked by merely halting the oil addition.

The twofold advantage of shortened time and added safety made possible higher production in the face of a serious shortage—in quality as well as in quantity—of labor. Men, too old by previous standards, and women were used successfully on the lines, replacing the younger men lost to the draft.

At P. B. O. W., in conjunction with the adoption of direct nitration, the equipment in the fortifier house was changed to enable it to be used for running bi nitrations. This change allowed the two nitrators of the former bi-tri house to be devoted exclusively to tri nitrations. Previous to this change the bi-tri house was pressed for time while the fortifier had spare time in the cycle. Also, the old, open sight boxes were replaced with more efficient equipment for separation. The tri houses used a protected pyrex tube in their separation lines which allowed the operators to see the sometimes difficult color break between acid and oil. The bi and mono houses installed top separators that syphoned the oils off the charges.

Upon the completion of these changes, the time cycle was reduced to one hour and ten minutes and shortly thereafter to one hour. The hour cycle gave a production of 80,000 pounds per line per day. In the neighborhood of the hour cycle it became necessary to change to larger sized flakers since the nitrating houses were producing more rapidly than the wash houses could flake out.



Nitrator in tri house, showing acid scale dial. Note safety shower in center of photo.

ACID RECOVERY

In the reduction of the cycle from 60

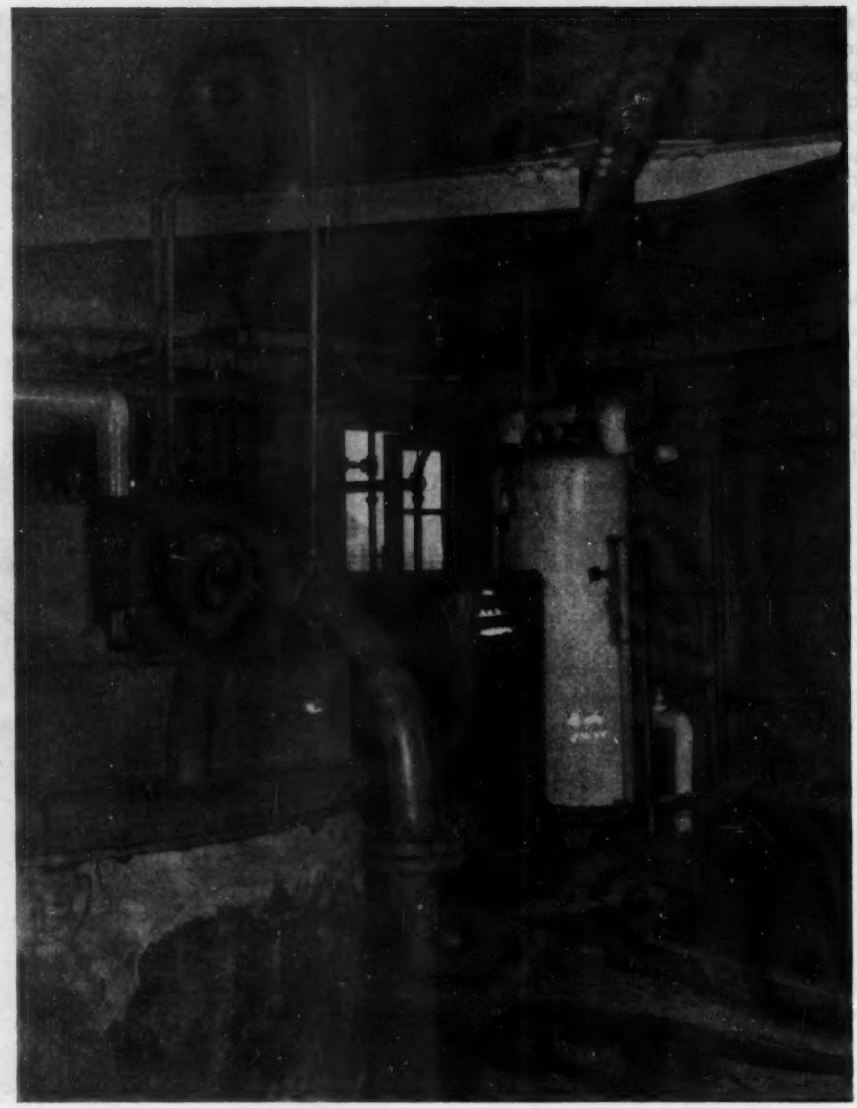
minutes to 45 and 40 minutes, the acid recovery capacity was greatly exceeded. They were originally designed to handle the waste acid produced on an hour and fifty minute cycle, and only with a great deal of forcing could they keep up with an hour cycle. A larger capacity denitration tower and a bubble-cap type absorption tower were installed to handle the increased amount of acid received. Upon completion of these changes, great difficulty was experienced in getting the recoveries to operate as efficiently as in the former setup. The new denitration towers had a tendency to boil over at even moderate flows, filling the nitric system with unwanted sulfuric acid. The successful solution to the problem was to trickle a dilute soap solution into the top of the denitration tower. This broke the foaming and the recoveries then operated with a capacity for handling waste greater than the line could send.

The final major process change made at P. B. O. W. was the adoption of the ammoniated sellite purification method. The use of ammoniated sellite eliminated the necessity for fresh water washing of the tri oil since the free ammonia neutralized the acid in the crude oil. The elimination of the wash water in turn made the use of catch boxes unnecessary. The catch boxes were wooden tubs used to retain the TNT precipitating out of the discarded cooling wash water. They were a considerable nuisance because the reclaimed material usually contained much wood fiber and dirt. The use of ammoniated sellite materially increased the yield and speeded up the wash house operations as well.

At the cessation of plant operations on V-J Day, the only obstacle to a faster time cycle than 40 minutes was the high temperature of the Lake Erie water used for cooling the nitrations and the flakers. With water at 40° F., as was supplied in the winter and early spring, it would have been quite possible to run on a 35 minute cycle or less.

TNT CONFERENCE

It should be pointed out that one of the chief contributions to the rapid exploitation of the various process changes developed by the individual TNT ordnance plants was the frequent regularly scheduled TNT conference. These conferences were sponsored by the War Department and held in rotation at the different plants. At these conferences the representatives of the various operating contractors submitted questions concerning their particular process problems. It frequently happened that a certain problem encountered by a particular ordnance plant had been met and solved at another plant. In addition to the technical discussion, a tour was made of the host plant's operating facilities. Such trading of information raised the general level of efficiency throughout the industry.



View in wash house showing melt tank, soda ash solution batch tank, elevator pressure tank, and, in the right foreground, a depelletor chute.



Four of ten ceramic towers used to recover nitric acid fumed from nitrator houses. Also visible are pulsometer tubes to lift acid and suction jet to exhaust stack.

NICOTINIC ACID

A Vitamin Becomes an Industry

EDITORIAL STAFF REPORT

IT IS ONLYA FEW YEARS since so-called vitamin B was shown to consist of several constituents, one of which prevented and cured pellagra, a disease which is still unfortunately too prevalent in our southern states. Synthetic nicotinic acid is now produced in large quantities to fortify foods.

PELLAGRA has been called a disease which shows itself by three D's—dermatitis, diarrhea, and dementia—and is caused, particularly in the South, by a diet consisting largely of three M's—meal, molasses, and meat. Although beef and most lean meats contain the pellagra-preventive factor, fat salt pork, which is a staple of southern diet, is completely ineffective in preventing the disease. Corn meal, too, contains little if any of the elusive vitamin.

The substance which prevented this disabling disease was found to be present in vitamin B-containing foods, but several years elapsed before the effective substance itself was isolated.

It was early discovered that vitamin B could be divided into two portions, one unstable to heat and the other relatively stable. The first was identified as thiamin, the beriberi-preventive vitamin B_1, and the second was found still to be complex.

Riboflavin was later isolated from the heat-stable portion, but it was learned that riboflavin alone did not prevent or cure pellagra.

In 1939 Elvehjem and his co-workers at the University of Wisconsin discovered that the residue of liver extract, after removal of the flavin, cured pellagra-like symptoms in chicks, and soon afterwards he succeeded in isolating and identifying nicotinamide from highly active concentrates of liver extract.

U. S. PRODUCTION OF NIACIN AND NIACIN AMIDE
(in pounds)

Year	*Niacin*	*Niacin amide*
1941	122,000	21,000
1942	222,000	70,000
1943	[1]	163,000
1944	[1]	[1]

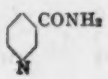
[1] Confidential; release of these data would disclose operations of individual companies.

Source: U. S. Tariff Commission.

Nicotinic acid is pyridine-β-carboxylic acid,



now commonly called niacin. Both it and its amide,



called niacin amide, are equally effective as vitamins, and both are being produced on a commercial scale.

The acid was originally prepared by the oxidation of nicotine, the molecule of which contains the pyridine nucleus joined to another nitrogen-containing ring. Oxidation burns up the other ring, leaving only the carbon atom which is oxidized to a carboxylic acid group as shown above.

It can also be made from the alkaloid trigonelline, but both of these materials are too expensive for large-scale production of the vitamin. In 1941 substantial quantities of niacin were made by nicotine oxidation, but processes depending on cheaper raw materials have been developed since that time.

Several manufacturers oxidize quinoline. Substituted quinolines obtained by the Skraup synthesis from aniline and glycerin can also be employed, although the synthetic material is hardly economical as long as natural quinoline is available from coal tar. β-Picoline can also be used.

In this oxidation the quinoline is oxidized by sulfuric acid in the presence of a selenium dioxide catalyst. The reaction mixture is heated until the approximate theoretical quantity of water is given off. The diluted, filtered, and neutralized solution is then decolorized with active carbon and the nicotinic acid precipitated with copper acetate. The copper nicotinate is filtered off, suspended in water, and treated with hydrogen sulfide. The copper sulfide is then removed by filtration and the nicotinic acid recovered by concentration of the aqueous solution.

The best yield from quinoline reported in the literature was 74.5 per cent, but it is understood that higher yields have been obtained in commercial practice. The reported yields from β-picoline were consistently lower.

COMPANIES PRODUCING NIACIN AND NIACIN AMIDE
(in 1943)

Niacin

Abbott Laboratories
Barrett Division, Allied Chemical & Dye Corp.
Calco Division, American Cyanamid & Chemical Corp.
Carus Chemical Co.
General Biochemicals
Hoffmann-LaRoche
Merck & Co.
N. Y. Quinine & Chemical Works
Pyridium Corporation

Niacin amide

Abbott Laboratories
Calco Division, American Cyanamid & Chemical Corp.
Gane's Chemical Works
Gelatin Products Corp.
General Biochemicals
Hema Drug Co.
Hoffmann-LaRoche
Lakeside Laboratories
Maxim Chemical Co.
Merck & Co.
N. Y. Quinine & Chemical Works
Pyridium Corporation

FROM PYRIDINE

The discovery by McElvain that pyridine could be brominated in the β-position led to a new synthesis of niacin, or, more directly, of niacin amide. The pyridine is brominated in the vapor phase to yield substantially pure 3-bromo-pyridine. Controlled conditions and catalysts afford an exceptionally high conversion.

The bromo derivative is then converted to 3-cyanopyridine by direct fusion with cuprous cyanide. This is hydrolyzed directly to niacin amide by a process not heretofore described in the literature. Although 3-cyanopyridine is stable to boiling water over a period of 100 hours, a trace of an alkaline agent permits conversion of the nitrile directly to the amide in theoretical yield in the space of a few hours. Such alkaline agents may be any of the organic amines which produce a pH of 9.6 or higher in aqueous solution. The amide obtained is of extremely high purity and suitable for direct use.

The described method is now used commercially by Gelatin Products Corporation, and a similar method is employed by the Pyridium Corporation. The latter firm also makes the cyanopyridine by treatment of the corresponding pyridine-sulfonic acid with an alkali cyanide.

NO. 1 OF A SERIES

INFORMATION SOURCES For Chemical Market Research

by RICHARD M. LAWRENCE
Development Department, Atlas Powder Company
Wilmington, Delaware

AGENCIES WHICH ISSUE and interpret statistics are planning postwar programs with generally broader scope and prompter publication. *Chemical Industries* takes pleasure in presenting this month the first of a series of articles by Richard M. Lawrence describing some of the publications and plans of these agencies that are of special interest to chemical market researchers.

Although devoted primarily to statistical sources, the series will also cover other types of market data, such as directories of manufacturers, specifications, and trade names. Each article will include a supplementary checklist of publications available from the sources discussed.

This first article is of an introductory nature and includes a checklist of pertinent general publications. Next month's article will cover the services and publications of the Bureau of Foreign & Domestic Commerce, and the one in February will cover the Bureau of the Census. Others will follow.

After all of the articles have appeared it is planned to reprint them in booklet form for general sale. — Editor.

IN THE CHEMICAL business, as in any other, "a man's judgment is no better than his information." It is the function of chemical market research to provide chemical company management with information and recommendations on a great variety of commercial, economic, and industrial problems. The major part of the chemical market researcher's job is one of analysis and interpretation of information, and it is thus basic to the success of his entire effort that he have the ability to lay hands on all available data pertinent to his problem.

Some writers have compared scientific, technological and market research with the aid of a triangular diagram, each side representing one of these types of research. As each of the boundaries is increased, the enclosed area of knowledge about a given subject is similarly increased. There is, however, one distinct difference between the characters of the advances made on the three fronts: Gains in scientific and technical knowledge are usually permanent, whereas information of an economic and commercial nature must be constantly renewed to be of value. Contrast, for example, the permanency of data on reaction rates and corrosion with the relatively short useful life of information on costs, prices, freight rates, tariffs, taxes, labor rates, and many other factors of supply and demand. Moreover, scientific and technological facts can be determined by experiment, while most of those pertaining to markets cannot.

SCOPE OF CHEMICAL MARKET RESEARCH

Business decisions can only rarely be made in the light of all pertinent facts, but, other things being equal, those based on the most facts and the newest facts are most likely to be correct. In a well integrated company, market research precedes, as well as parallels, technical research, and complete familiarity with sources of data is essential to a rapid and effective approach to the "terminal" problems of analysis, interpretation, and presentation.

In a market survey of a selected chemical, the market research man is essentially studying the situation of supply and demand, costs and prices, with particular reference to his company's actual or potential competitive position. His job is like putting together the pieces of a picture puzzle. It may be impossible to get all the pieces, as many may be the well-guarded property of other companies. However, if he can get enough he can determine the general outlines of the picture with fair assurance. In arriving at these outlines, statistics usually play a major part, but other types of information provide the coloring, the highlights and shadows, that make for a more complete and accurate portrayal of the situation. There is no substitute for ample data and a large number of information sources.

In the main, chemical market research work deals with the chemical process industries, for it is these industries which comprise the principal primary markets of chemical manufacturers, although it is also true that almost every industry is a consumer of chemicals to some de-



Brooks Studio

Chemical market research is based on the business facts and figures of many industries, drawn from a great variety of scattered literature, some of which is shown here with Gretchen D. Little, technical librarian of Atlas Powder Company

gree. The process industries include, in addition to chemical manufacturing itself, pulp and paper, ceramics, leather, rayon, paint, plastics, petroleum refining, explosives, rubber, sugar, fertilizer, textile finishing, cement, soap, drugs, etc.



Brooks Studio

Mr. Lawrence has been in the development department of Atlas Powder Company since 1936 and before that was a member of the Chemical Division of the Tariff Commission. He has been especially interested in chemical market research data sources for a number of years.

But evaluation of chemical markets also requires information on end-use consumption of chemicals. While few chemicals as such are sold to or even seen by the general public, it is what the public buys (e.g. shoes) which generates the demand for chemical process products (leather, rubber) and activates their demand for chemicals (bichromates, carbon black, etc.). Raw material studies often reach still further back into the basic data of mineral and agricultural production.

The chemical market research man, therefore, has an extraordinary range of interests, expressed in his demands for data on almost every type of industry and operation.

To illustrate, a chemical company may be interested in sources of fluorine-bearing minerals for use in the manufacture of refrigerants and may estimate the market for its products in terms of the output of refrigerators and the floor space of frozen food locker installations. It may also be interested in trends in air conditioning and dehydrated food. It is interested in the brewing industry, which uses its byproduct hydrofluosilicic acid as a disinfectant. In addition, the company may produce anhydrous hydrofluoric acid, used in an alkylation process for aviation gasoline, and other fluorine products, for which insecticide outlets are of great importance.

Also, the particular types of functional data required, as contrasted with industry and regional data, are extremely varied. A product study may involve data on capacity, production, consumption, stocks, imports, exports, international trade, price structure, costs, tariffs, taxes, index numbers, conversion factors, foreign exchange, freight rates, specifications, legal restrictions, containers, names of producers, trade names, labor rates and other matters. Products and industries may be measured in terms of quantities, values, prices, number of employees, equipment installed, power consumption and other significant data.

In studies of individual companies, information usually must be developed on ownership, key personnel, corporate affiliations, plant locations, lines of products, manufacturing facilities and processes, disposition of byproducts and waste products, financial standing, customer industries and companies, markets, potential

These Major Classes of Source Material . . .

- Reports and periodicals of federal and state bureaus, chambers of commerce, trade associations, universities, public utilities
- Trade journals
- Industrial handbooks
- Trade directories
- Yearbooks
- Advisory services
- Corporate reports
- Prospectuses
- Credit reports
- Industrial surveys
- Catalogs and data sheets
- Price lists
- Maps
- Mailing lists
- Theses

. . . Provide These Types of Market Research Data

- Capacity
- Production
- Sales
- Shipments
- Consumption
- Stocks
- Imports
- Exports
- Tariffs
- Taxes
- Prices & price structures
- Specifications
- Containers
- Labor rates
- Trade names
- Names of manufacturers
- Plant locations
- Index numbers

developments, and competitive situation with reference to other companies, imports, and substitute products.

SOURCES OF INFORMATION

The chemical market research man begins with the available sources of information in his own company: the sales department, the purchasing department, the traffic department, and other "eyes and ears of the organization." Information from internal sources is supplemented with correspondence and field work with suppliers, customers, government bureaus, trade associations, universities, public utilities, and other contacts. Much of the basic information of chemical market research, however, is in the many literature sources which will be described in the succeeding articles of this series.

Governmental bureaus are the major sources of published market research data, but there are also dozens of private sources such as trade journals, yearbooks, and directories of many industries.

Because of the many blind spots in the literature, it is important that that which is available be utilized to full advantage. Much of the literature of chemical market research is sporadic and requires a great deal of searching because of its relative inaccessibility.

In contrast with the technical and scientific literature, which is superbly covered by *Chemical Abstracts*, the literature of chemical market research is very poorly indexed, and relatively little study has been devoted to the subject. The codification of its literature is a major step in the advance of an emerging profession, and this step has not yet been taken in chemical market research. The proposal that the Chemical Unit of the Bureau of Foreign and Domestic Commerce start an abstract service in this field has met with an enthusiastic response.

Data on consumption of chemicals are relatively rare. Examples are creosote used in lumber-preserving and census data on materials used by certain industries. Among the best of all are the War Production Board's published reports on allocations.

The most complete statistics, which indicate the ideal, are those on alcohol, published by the Treasury Department. These figures show production by states, by processes, by raw materials, and they show consumption by formula, by use, and by state. A number of states publish figures on farm consumption of fertilizer in elaborate detail, by counties, and by products.

A good Government survey on a product may have cost $20,000 and be available for 25 cents. It is obviously important that no such valuable sources be overlooked, and they must be ordered promptly before they get out of print. Although market research data sources become out of date very rapidly, many of the old reports are valuable for providing background and methods of analysis. The literature of chemical market research is becoming steadily more abundant, a trend which will doubtless continue.

PRIMARY SOURCES

For basic statistics of chemical production, the major publications are those of the Census Bureau, which cover all manufactures; those of the Tariff Commission, which cover synthetic organics in great detail; and those of the Bureau of Mines, which cover minerals and metals and a number of related chemicals. Statistics of imports and exports are published in the Census Bureau's detailed annual "Foreign Commerce and Navigation of the United States" and in monthly publications.

The sets of publications just mentioned are justly regarded as the "big four" of the chemical market researchers' literature.

An important recent statistical development was the cooperative issuance of detailed monthly figures by the War Production Board, the Census Bureau, the Tariff Commission and the Bureau of Mines. These "Facts for Industry" series, which began in 1944, now cover more than 100 products of interest to the chemical and process industries. In addition to production data, these releases include figures for consumption and stocks.

Other series of basic figures concerning the chemical and process industries are published in the Department of Agriculture's annual "Agricultural Statistics" volume, special reports (naval stores, wood preservatives, fertilizers, etc.), and monthly publications. A number of valuable series of commodity figures of narrower scope are regularly published by the Treasury Department and other governmental units.

The Department of Labor issues detailed figures on wages, living costs, and prices. Other figures are published irregularly in the special studies of a number of government departments.

Practically all foreign countries publish statistics of imports and exports. The leading industrial nations publish production statistics, but usually in far less detail than those of the United States Government.

In a few cases, state bureaus issue statistics of considerable interest to the chemical industry such as data on fertilizer consumption and mineral production. University bureaus of business research, chambers of commerce and state bureaus often issue directories of manufacturers.

SECONDARY SOURCES

Many of the most important statistics of United States production and foreign trade are regularly republished in the monthly "Survey of Current Business" and the annual "Statistical Abstract of the United States." The Manufacturing Chemists'

Association issued "Chemical Facts and Figures" in 1940, with all important chemical statistical series for several prior years.

CHEMICAL INDUSTRIES regularly publishes a wealth of material in its monthly statistical section, and leading trade journals in other fields usually republish government statistics in regular or annual issues and yearbooks.

Many trade associations publish their own and government statistics on production, imports, exports, and prices. Excellent examples are the American Petroleum Institute, the National Fertilizer Association and the National Paint, Varnish and Lacquer Association.

Periodicals and special reports containing analyses, interpretations and reviews, many including special statistics not elsewhere published, are issued at frequent intervals by the Bureau of Foreign and Domestic Commerce, the Bureau of Mines, and the Tariff Commission. (e.g. "Domestic Commerce Monthly" and "Industrial Reference Service" of the Bureau of Foreign and Domestic Commerce, and the "Chemical Nitrogen" survey of the Tariff Commission).

A variety of figures and background information are published in industrial directories, financial advisory services, company prospectuses, corporate reports to stockholders, manufacturers' catalogs and technical data sheets, regional industrial surveys, and credit reports.

EARLIER LITERATURE

"Market Research Sources," a valuable series of reports issued by the Bureau of Foreign and Domestic Commerce (8th edition, 1940), describes the activities and provides a detailed checklist of publications of federal, state and local government agencies, also colleges, publishing houses, chambers of commerce, trade associations and other commercial organizations.

Also noteworthy are the numerous publications of the Special Libraries Association, which effectively promote their aim of "Putting Knowledge to Work." The association's reports on sources include "Guides to Business Facts and Figures" (1937), "Handbook of Commercial, Financial and Information Services" (1944), "Statistics of Canadian Commodities" (1935), and "Directories for the Business Man" (1938).

In Chaplin Tyler's "Chemical Engineering Economics" (2d ed., 1938, McGraw-Hill), the chapter on project analysis describes leading sources of commercial information. Mr. Tyler emphasizes the importance of being thoroughly familiar with the sources in order to get the most out of such data. In his recent article on marketing research (*Chem. Eng. News*, 23, 798), R. S. Aries also emphasizes the importance of utilizing all available information and lists numerous sources.

M. C. Molstad's exhaustive discussion, "The Literature of Chemistry and Chemical Engineering" (*Ind. & Eng. Chem., News Edition*, 16, 206-214) includes references to the Government's principal statistical reports. The value of this paper has been attested by a huge demand for reprints. Schmeckebier's "Government Publications and Their Use" (2d ed., 1939) and Boyd's "U. S. Government Publications" (2d ed., revised, 1941) are comprehensive and valuable books.

CHECKLIST OF GUIDES TO SOURCES

1. Aries, R. S., Chem. & Eng. News, *23*, 798, 1945.
2. Boyd, Anne Morris, "U. S. Government Publications," H. W. Wilson (2d ed., revised, 1941).
3. Davenport, D. H., and Scott, F. V., "An Index to Business Indices," Business Publications, Inc., Chicago (1937).
4. Industrial Marketing magazine, Advertising Publications, Inc. Market data book (annual). Data on trade journals and other sources.
5. Manufacturing Chemists' Association. Monthly releases, with lists of new publications.
6. Molstad, M. C., Ind. & Eng. Chem. News Ed. *16*, 206 (1938).
7. Schmeckebier, L. F., "Government Publications and their Use," Brookings Institution. (1936) $3.00.

Special Libraries Association
8. Directories for the Business Man (1938) $1.00.
9. Guides to Business Facts and Figures (1937) $1.50.
10. Handbook of Commercial, Financial & Information Services (1944) $3.00.
11. Index to American Petroleum Statistics (1943) 50¢.
12. Source List of Selected Labor Statistics (1944) $1.50.
13. U. S. Government Periodic Publications—A Descriptive List (1942) $2.00.
14. Tyler, Chaplin, "Chemical Engineering Economics," 60-68, (2d ed. 1938), McGraw-Hill Book Co.

Bureau of Foreign & Domestic Commerce, Department of Commerce
15. Market Research Sources (8th ed., 1940).
16. Price Sources (1931).
17. Sources of Current Trade Statistics (1937). Out of print.
18. Sources of Regional & Local Business Statistics (1940).
19. Statistics and Maps for National Market Analysis (1944).
20. Survey of Current Business (note sources of statistical series).
21. "Synopses of Information" on selected chemicals.
22. Bureau of the Census, Department of Commerce Statistical Abstract of the United States (note sources of tables).
23. Library of Congress. Monthly check-list of State Publications $1.50 per year.
24. Supt. of Documents, U. S. Govt. Printing Office, "U. S. Government Publications," a monthly catalog with annual index, $1.00 per year.

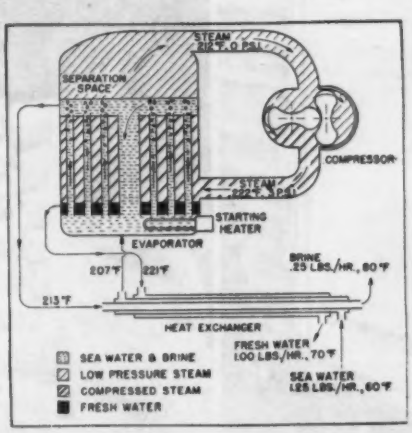
COMPRESSION EVAPORATOR

COMPRESSION of vapor to allow its use for vaporization of further liquid has enabled the development of evaporators of unusually high fuel economy for use in preparation of potable water from sea water.

USING compression evaporation, developed by Arthur D. Little, Inc., it is possible to produce an average of 175 pounds of distillate per pound of fuel consumed, when distilled water is being prepared from sea water. Compression evaporation depends upon mechanically compressing the vapor leaving the evaporation compartment of the evaporator. This compression raises the temperature of the vapor and at this higher pressure the vapor condenses at a temperature somewhat higher than the boiling point in the vaporizer. It is the heat flowing from the condensing steam to the material being distilled for boilup. Thus, the condensing vapor is used to supply heat inside the steam chest of the evaporator in place of steam from sources outside the unit. Provision for reducing heat losses to the atmosphere and recovering heat from the distillate and waste material from the boiler as they cool down to room temperature completes the system. No separate condenser or cooler need be used. The only energy requirement is that necessary to make up losses and raise the vapor temperature 9° F.



Gasoline driven compression evaporator capable of producing 1800 gallons of distilled water per day from sea water.



Diagrammatic representation of compression evaporator as applied to the distillation of sea water.

Application of the principles used in the development of this evaporator is reported to have been attempted as early as 1856, but there was little development until after World War I when it is reported that few installations were made by two or three European firms. No American industrial application appears to have been made.

(*Continued on page 1131*)



Boxcar partly loaded with fiber drums. Note application of metal bands to the second tier.

Car Bracing with Steel Bands

by T. PAT CALLAHAN, Supervisor of Containers
Monsanto Chemical Co., St. Louis, Mo.

THE USE OF STEEL BANDS for bracing packaged chemicals has proved efficient and inexpensive.

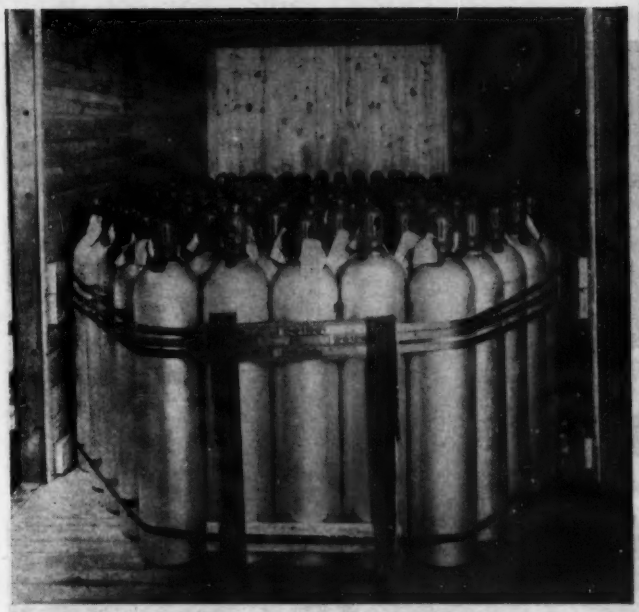
THE SAFE shipment of chemicals requires that they be packaged in containers meeting the requirements of the various agencies of transportation. During the past years much emphasis has been placed on safe packaging of chemcals; but while packaging itself is of the utmost importance, the loading, stowing, and bracing of the packages in transportation is of equal importance. It is obvious that no package is safe enough to withstand the impact of transportation if it is not properly loaded, stowed, and braced.

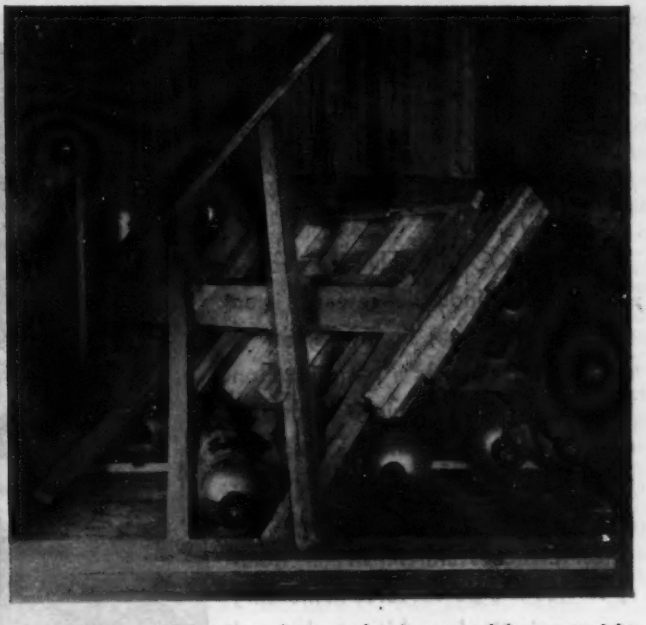
There are many ways of bracing packaged chemicals in cars. Both the Association American Railroad and the Bureau of Explosives have issued many pamphlets describing safe methods of stowing and bracing materials, and these have helped to a great extent in reducing the damage to packages and goods in transportation. For years, wood was the conventional material for bracing carload shipments. During the past few years, however, tying by metal banding or strapping has come into prominence, and this method has proved very practicable for bracing all forms of packaging. Particularly has this been true during the war period, when the various companies engaged in the production of metal bands have engineered various methods to insure safe delivery of packaged goods by much less expensive bracing operations.

Two methods of steel banding are generally employed: the floating load method



At left, kraft and band door stripping protects multiwall bags. At right, stripping is removed for unloading. Note cleanliness of bags.





Metal banding of compressed gas cylinders eliminates use of heavy and expensive wood bracing. Insecure bracing caused havoc at right.

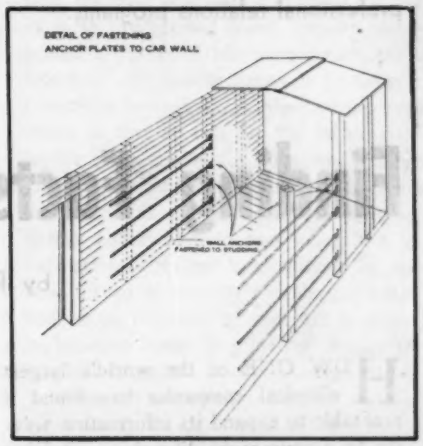
and the anchor load method. In the floating load method, metal bands completely surround a unit of packages, tying them completely together and allowing the unit as a whole to shift with the impact of the car. This allows the force of the shock to be distributed evenly. By restricting the amount of shift which a unit can undergo upon impact, the load is protected against violent collision, dissipating shocks due to any form of impact such as sudden starting or stopping of the car.

Car loading engineers have found that for certain commodities the anchor method of steel strapping is very efficient. The most common application of this method is by anchorage to the car walls. This is accomplished by attaching the steel bands with anchor plates or with screws or nails. One of the large metal banding companies points out that in all anchored loading it must be remembered that the job will be only as strong as the car walls to which the straps are attached. One drive screw or 16-penny nail driven in a sound studding will hold more than a rail spike in an unsound board.

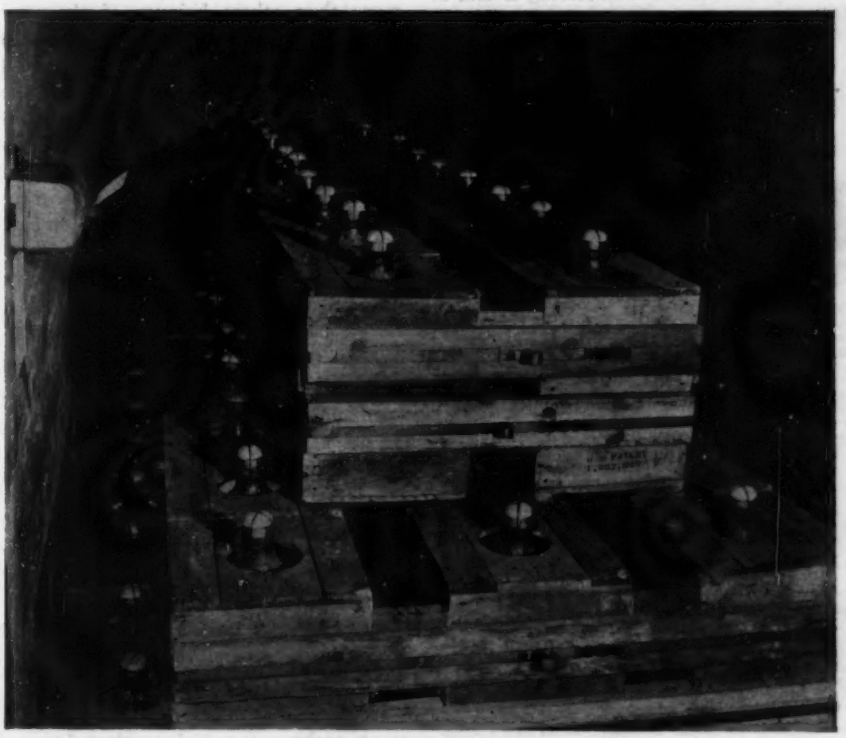
Considerable savings are effected by the use of metal banding over other forms of bracing. Wood and labor incident to bracing certain cars cost as high as $25 to $35 per car while the cost of metal bands, including labor, runs between $6 and $10 for an equal amount of protection. In addition to this saving, there is also the freight saving on heavy dunnage. It is also much easier to cut metal bands at the time of unloading than to remove heavy wood bracing.

There has also been developed a door protection which can be applied to the doorways of freight cars. This consists of heavy craft paper-covered metal bands which art nailed to the sides of the car at the doorway to prevent damage to lading in the doorway of cars. This is particularly helpful in shipping carloads of bags, since damage to carloads of bags invariably occurs at the doorways, where the bags are snagged by the irregular door frames.

During the past few years several chemical companies have made shipments of all forms of chemical containers in which the metal banding has been very successful. The various manufacturers have been working during the war with the various services of the government, and their engineers, in conjunction with the leading experts of the government, have made phenomenal improvements. Metal bands can and will be utilized by the chemical industry for bracing shipments safely and inexpensively.



Diagrammatic sketch showing application of anchor plates to wall of car for anchor loading



Carboys loaded by anchor method. "Shock Recorder" at left registers impacts up to 10 m.p.h.



Company physician asks librarian for bibliography.

LONG RECOGNIZED as a necessity wherever industrial research is an organized activity, library service is steadily emerging as a basic function in the nation's chemical industries, existing not only for the scientists and the engineers, but for every employee from the president to the guard at the gates. It reaches farther than that; library service is a potent force in molding an organization's public, trade, and professional relations programs.

Finding Facts for a Chemical Clientele

by IRENE M. STRIEBY* and BETTY JOY COLE**

HOW ONE of the world's largest chemical companies has found it profitable to expand its information service to twenty-seven libraries containing 100,000 books and bound journals pertinent to chemical manufacturing is told in *Books—or Bunsen Burners.*[1] In this instance broad fields of interest must be covered in various geographical locations and methods devised of expediting intra-company information. Scores of companies much smaller in size, and decidedly more limited in products manufactured, maintain well-equipped libraries in charge of specialists who are accustomed to interpreting their work on a service basis.

Twenty of these libraries representing typical raw as well as finished product chemical industries, have been questioned concerning the kind of service rendered. In most instances it was found that, although the company library was organized originally for the use of research staffs, it soon found itself serving the entire clientele. *Clientele* is used rather than *personnel* since questions may come to the library from without as well as from within an organization. With such data available it is possible to draw a composite sketch of types of service given by a library staff and to point out its value to the organization of which it is a part.

MANAGEMENT USES THE LIBRARY

Some departments need library service more than others because of the very nature of their work. When management needs it, answers often must be produced on short notice to such questions as the business background of a chemical consultant for whom a long-distance call has been placed or the military record in both World War I and World War II of an army representative who has just arrived from Washington to speak to a supervisory group and who must be properly introduced.

Called just an hour before the evening whistle blew, one librarian calmly sat down to figure how many molecules of triethanolamine lauryl sulfate can be put on the point of a pin. A vice-president of her organization wanted to make a statement in a talk at seven o'clock that evening and it was to her he turned for help. He got it and to him his talk would not have been successful without that information. His librarian is a chemist who finds her work more exciting than when she was employed in the laboratories.

Never willing to be regarded primarily as an archive, the modern plant library can, however provide the space and organization for the preservation of company historical material as well as biographical data of the individuals responsible for its success. When material of this type is scattered through files in a dozen different departments, it never comes to light at the moment it is needed. It is a grateful management that, when it decides a business history should be written, locates its old price lists, pictures of early buildings, and complete files of its publications in the library. Furthermore, business histories of other organizations may be found there for surveys.

Management too, depends upon its library staff to route periodicals and current business services among those executives responsible for setting company policies, and also to devise a way to keep these moving if an individual is inclined to cover them with other papers on his desk. Since the librarian often scans the printed material upon receipt and notes items of special significance, she uses the telephone, personal memoranda, photostats, or any other method available to get an item into the hands of the executive likely to be affected.

LEND-LEASE EXTENDED

The Research Director of a midwest chemical process industry asked his librarian to tell him how the thirty divi-

* Lilly Research Laboratories, Eli Lilly and Co., Indianapolis, Indiana.

** Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J.

sions of the Kaiser Wilhelm Institute were financed. He had the idea that this institution represented unusual co-operation between government and industry so also wanted to know its plan for choosing executives from industry, from government, as well as from the various fields of interest represented by the divisions. *Minerva* was inadequate and the *Education Index* listed no comprehensive article on the subject. The outcome was to send to the Library of Congress for the latest annual report on file; the director did not have to wait for V-E Day for his information.

Another instance of bringing literature to the user was when a library staff of a chemical company made it possible for a professor of the state university extension center to write his handbook of organic compounds used as reagents in qualitative analysis. The university library was located miles away; he had neither the time nor the gasoline to make biweekly trips to it. He was provided with an identification badge and allowed to use the plant library during working hours. The staff also secured for him photostats and microfilms of articles from larger libraries. Incidentally this also illustrates building good will through professional co-operation.

Methods of Presenting Information[2] and *Getting News to the Research Staff*[3] are publications describing, in some detail, various ways of assisting chemists, engineers, and other research staff members who want to keep abreast of developments in their fields in order to speed the progress of their own projects. Although the quantity and type of service vary with the organization, as well as with its library personnel, the primary goal is always to make available the latest technical information in its own as well as allied subject fields.

To supplement the usual methods of inter-office communication, plans described include distribution of abstract bulletins, photostats of tables of contents of current journals, microfilms of articles in foreign publications lost in transit during the war, literature search reports, together with more personalized service when it is needed. No matter how comprehensive is the collection of books, journals, patents, pamphlets and government documents at hand, each librarian must depend on obtaining references from other libraries, she reciprocates in loaning to others who turn to her for help or substitutes photostats for material that cannot be loaned.

In *Opportunities for Chemists in Literature Service Work*[4], functions are described, some or all of which may be assigned to the library staff. In addition to reference work, abstracting, and indexing they are bibliographic work, patent searching, translating, editing, and writing—all operations calculated to correlate the activities of the research staff. A special task performed by one library is the preparation of data sheets on the properties of raw materials used; this information is abstracted from laboratory reports supplemented by literature references, and kept up-to-date for staff use.

In every technical library there always are special files that must be organized and kept up-to-date, emphasis depending on the use to be made of them. They include product files covering all competitive items, calendars and programs of meetings, annual reports of foundations, college catalogs, house organs, professional directories, telephone books, historical and biographical material, reprints, and research contact files. Many industrial libraries house research reports which have been indexed by the staffs.

What a time saver it would be to be able to open a card catalog drawer and select some micro-cards, on the backs of which is found the complete text of the book one needs! According to Rider[5], this will be both possible and practical now that civilian goods can be produced again. Something of this sort is long overdue. More recently one has read of a mechanized private file and library, stored in a desk, on top of which is a translucent screen upon which can be projected file material, and a keyboard attached to be operated by buttons and levers. Until this "memex," envisioned by Dr. Bush[6] comes into general use, the research worker needs the library to replenish his stored-up knowledge of the past with the record of current progress. In fact, this innovation would be no substitute; the library holds the primary research tools.

LIBRARY GOES TO MARKET

If the organization is to prosper, its products must be sold; there are many ways in which the library can be of service to the marketing division. In addition to direct questions answered from directories, catalogs, technical and trade magazines, and government publications, the library staff can handle questions referred to the home office by the salesmen, questions often asked for the benefit of potential customers. For example, if a dye salesman is asked for information about colored smoke signals and it happens that he knows little or nothing about them, he does know that he can refer the question to the company library from which he will receive not only a prompt reply but also photostats of one or two articles that will be appreciated by his questioner.

Salesmen in many organizations are kept abreast of developments in their product field with abstracts distributed by the library. Not always having access to the vast amount of technical literature, the busy salesman is grateful for bits of it in predigested form, usually interpreted in terms of his company's specific interests. Especially happy is he to have comments on new applications of his push items so that he can use the information in his sales contacts. How much more alert he can be if he happens to be selling fluorescein as a reagent for the dye industry and is able to pass along the information of its use in signalling by airmen forced to use their rubber life-rafts and, more recently, of the part it played in locating leaks in pipelines across the English Channel.

When an organization plans its own advertising, the library is called upon to check all sorts of facts before they are used as building blocks for advertising



Chemist translates Russian article from a micro-film projection working in a library study room. Library assistant checks spelling in the dictionary as she records the translation.

literature. Where else but in the library could one expect to identify a memorial plaza in Buenos Aires, shown in a kodachrome sent in to illustrate an article on drug stores in Argentina, yet minus the specific information as to name and location? Illustrative material of all types is needed and can be located at a minimum of time and expense by the librarian, even though she sometimes must use her knowledge of source materials in other libraries of the region.

It is said that a book is no better than its index. Familiar as she is with indexes in her daily work, the librarian is in a position to advise or to assist in the preparation of indexes to the company publications. Her practiced eye quickly catches an item in the therapeutic manual under *C*, which is not where it should be, and points out that *Colorless Mineral Oil* should be indexed under *Mineral* even though users had struggled to find it under *Colorless* for twenty-five years. Likewise, if consulted, she suggests that *Sodium Chloride Tablets* be put under the name, with a cross reference from *Salt Tablets,* instead of under *Tablets,* which is where she found the item.

Recognizing that marketing research is integrated with technical research and production, as well as with distribution of the company's products, the librarian is in a strategic spot to note the published material and to tie it in with the needs of all three, when a report is wanted for a new product under consideration. For instance, when the medical department needed information in 1940 on malaria and its treatment, one librarian developed a classified bibliography on its history, geographical distribution, such morbidity and mortality statistics as were available at the time, and the treatment recommended. When a marketing research report was needed two years later on possible substitutes for quinine, the work was shortened by turning over this file.

Some "imagineering" came into play when a member of the territorial schedules group needed help in finding some detailed information on the population and economic status of Goajira. His librarian learned that this peninsula in Colombia is also known as Guajira and then she turned to the *Population Index,* published by Princeton, a source unknown to the department asking for it. The complete answer was not there but through it she located an article in a foreign statistical journal: *A Demographic Panorama of Guajira.* A photostat was ordered and the information proved satisfactory.

STEPPING OUT WITH PRODUCTION

Closely allied both to sales and research is production. Increased interest has been manifested in quality control, a problem that affects all three divisions. It was no surprise to the librarian in a plastics company to receive a request for a bibliography on statistical methods in use, as well as other good material on the subject of management of inspection and quality control. The collection and distribution of these references among top management, as well as supervisors, helped to make them "quality minded" and preceded the final decision to build a pilot plant as the immediate goal.



Lunch hour sees the station library in operation. Librarian from the Indianapolis Public Library and a company employee are on duty to handle the large demand for spare-time reading.

Shipment of goods into tropical countries in an amount never believed possible before 1942 called for hasty as well as continuous examination of the problem. Many libraries in chemical industries had requests to call each new item of interest to the attention of the packaging department. Many times hurried calls for information were due to new specifications on a war order that must be filled at once such as: "Who makes water-resistant crepe cellulose wadding with waterproof jacket? What are its dimensional specifications?" For the same department in a pharmaceutical company the librarian collected references on control of insect infestation of drugs, in response to a request for help addressed to her organization by a national agency concerned with setting standards.

In planning for doubling capacity to manufacture a single product, another librarian was asked for information on the processing of soybean oil. "Why," mused this librarian, "should we become suddenly interested in that bean, versatile though it is? It is not on our inventory list of raw materials." She found half a dozen articles on the subject but it developed that not one would serve the purpose. It was at that point she learned that the emphasis was on the process and not at all on the bean or the oil it produces. She then ordered *Soybean Chemistry and Technology,* which book contained exactly the information needed, even to illustrations of machinery and where it is made and used. This information enabled planning for a manufacturing process similar to the one used for the bean oil.

The efficiency engineers are always eager for the department heads and supervisors to be aware that better methods add up to high production which, in turn, lowers the costs of manufactured products. Many an employee has seized an idea in reading factory management periodicals, routed to him by the library, then figured how he could apply it to improve a process. The librarian has her reward when she notes a substantial sum awarded him through the company Suggestion Plan. In fact she may have helped him in securing further references needed.

THE STAFF EARNS A DIVIDEND

Someone has said that selling begins at home so any help that the library can render the Department of Industrial Relations, in all of its ramifications, will pay dividends to the library staff. A department of this kind in any organization always submits its share of sixty-four dollar questions such as the following: "Who has made a survey to learn what kind of music is liked best by those working in an inspection department?" or "Can you find specifications for women's washrooms?" Come also easy questions such as those on cost-of-living statistics, the method of obtaining a birth certificate in Nebraska, or "Did Epstein write a book on social security?"

The librarian of a photographic indus-

try was asked for an article mentioned in a discussion at the 1942 Silver Bay Industrial Conference. The subject reference was obscure so it was necessary to verify it in the conference *Proceedings*. The Industrial Relations branch of the city Chamber of Commerce had a file but the one for this particular year was missing. However, the librarian there knew an individual in the city who also kept a file of the *Proceedings*. Thus the reference was tracked down in less than half a day and saved much time in correspondence.

From the editors of employee's magazines librarians receive many questions such as requests for material in planning cover designs, verification of a quotation, books on hobbies, or colored pictures to use in illustrating a story—for example, plants and grasses which cause hay fever. Employees who are asked to submit articles to the magazine are welcomed to the library when they are seeking source material. Some library staffs furnish book reviews or feature news of particular collections that will be read with interest by employees who regularly read their magazine.

That the library can render a real and tangible service to a Safety Director has been demonstrated by at least one manufacturing company. This service was the preparation of a plant-wide safety manual. It was not the brain child of the librarian who sat down and wrote what she thought should be incorporated in such a publication but rather a compilation of rules which were in existence, which were workable, and which covered all possible hazards of each operation. The first step was to request from the divisions within the plant a copy of the safety rules applying to each unit.

The next step was a discussion of the rules by the head of the safety department and the librarian with the supervisor of each unit. This brought out that, in some cases, certain operations were no longer being carried out so that rules applicable to them were obsolete; in other cases, new processes had been installed but no rules written to cover all possible hazards. These discussions, by deleting obsolete and adding all new material, resulted in rules which were applicable and in force at the time. The final step was the arrangement, editing, and indexing of the material. The result was a loose-leaf manual of 130 pages, so arranged that any one could turn to the rules covering a division, a unit within a division, or a specific term, such as the use of safety goggles, with a minimum of time and effort.

Another instance of aid rendered to that same department in another plant came when the Interstate Commerce Commission's code for labeling and shipping hazardous chemicals had been misplaced. At 1:30 p. m. the Safety Director asked for colored illustrations of labels used on containers for the various types of chemicals so that he could take them to a two o'clock meeting. Since there was an article giving exactly the information needed, abstracted from CHEMICAL INDUSTRIES in the library abstract file, which noted that illustrations were included, this substitute proved satisfactory and the article was made available for the scheduled meeting. Time did not permit ordering another copy of the code nor to borrow from another source.

Library service is an adjunct to any employee training program. Several librarians have been asked to compile reading courses on advertising and salesmanship, office methods, manufacturing methods in their specific field, accounting and bookkeeping, job evaluation, time study, and the like. The books and articles are borrowed from the library; when the course is completed the employee is presented with a certificate signed by the librarian and the educational director. This type of program may receive more impetus in coming years as an integral part of a retraining program for our returned war veterans.

Book collections for recreational, inspirational, and educational reading by employees exist in many plants removed from areas having adequate public library service. Others, in metropolitan areas, are taking advantage of extension service offered them by public libraries. One successful plan is sponsored jointly by the company library and the Department of Industrial Relations. A representative of the city library staff is on duty with a plant employee who knows the personnel. The library is open from eleven until two on Tuesday and Thursday of each week. The books and charging desks are conveniently located in the wide hall between the cafeteria and the recreation rooms. Statistics indicate the increasing popularity of this co-operative undertaking, not surprising when one considers how little time could be spared from the production line these past five years.

SERVICE GIVES AND TAKES

In a small organization, all legal work may be carried out by a single department. In a large organization, the work may be divided among a division which handles matters regarding contractual relations, one which deals with municipal, state and federal legislation concerning workmen's compensation, food, drug and cosmetic laws, labor laws, OPA, etc., and the patent division, which handles everything in that particular field from the application to the infringement of a patent.

The library can give valuable assistance to the legal department by calling attention to items emanating from government sources which are found on the Washington page that practically every technical or trade paper has, which come to the library in the form of government releases, or which appear in the many "services" that come to the librarian's desk. Some librarians are called upon to aid the patent division by making literature searches for prior art, by checking current patents for similar or related processes and products, by maintaining a file of all patents of interest to the organization, and by ordering copies of patents upon issuance.

Clipping and filing quotations daily from the *New York Journal of Commerce* is an activity of one industrial librarian because she is frequently asked this type of question: "What was the value of the Indian rupee on August 31, 1943?" Nor is she surprised if an accountant asks if May 17, 1942, fell on Sunday. The treasurer may inquire what chemical companies paid a cost-of-living bonus subsequent to World War I or ask for data on prewar industrial investment in China. Service to the financial division may be casting bread upon the waters; it has its own ready reference tools, not duplicated in the library, which the librarian may need to use in answering a question for someone connected with another division. Name of a corporation executive might be a bit of information needed by the legal, research, or half a dozen other departments.

It is to the purchasing department that it can render special service, not so much by answers to questions such as who makes a certain type of machinery in Great Britain, a fugitometer for example, but by taking over the load of requisitioning innumerable books, journals, pamphlets, and government documents requested by any source within the company. Even a salesman may want a book for one of his customers in Brazil. There are special aids for ordering this type of material in the library; the information for the order can be secured there in a minimum amount of time and the requisition, on which appear notations as to source and cost, can be forwarded to the purchasing department. Likewise, the follow-up work in case of non-receipt of periodicals and other printed matter is done more quickly in the library.

While the general office does not make as many demands upon the library as those departments which require specialized information, the library should be ready to give any assistance which may be required. This is done generally by supplying dictionaries, secretary's manuals, translating letters written in a foreign language, giving information about addresses, title, or position held by an individual, correct usage of words, exact meaning of foreign phrases, and, sometimes, the settling of a bet. All the odds and ends of information and authoritative answers to small, puzzling, but often important, questions can be given by the library.

Distinct from the engineering department, which deals with production problems, is the service division, which has

charge of planning new buildings, and maintaining the older ones. Here, again, the library is more apt to be called on for general rather than special assistance. Requests for copies of standards, specifications, books on drafting and architecture, and subscriptions to general engineering periodicals are the usual demands from such a division. Occasionally there come requests for periodical articles on such subjects as air conditioning, lighting plans for laboratories, or the harmful effects, if any, of fluorescent lights upon the eyes.

Discussion of service to various other departments within an organization must be omitted due to lack of space. One more instance might be mentioned, however, because of the significant expansion of foreign trade. Invaluable aid can be given to those responsible for building up units to carry on trade in all the countries of the world. In fact, questions of an international nature will challenge each librarian in the coming age so her knowledge of foreign directories, statistical sources, and business information must, of necessity, increase.

THOSE WHO FIND THE FACTS

The company library may house one of the best special collections in the field but it would be of little concrete value without a competent individual in charge. Some educational qualifications which should be evaluated are: knowledge of subject and related fields, knowledge of foreign languages, knowledge of library science; these are also emphasized by Ellwood [7] and McColvin.[8] Among personality traits to be considered are resourcefulness, enthusiasm for the work, determination, adaptability, tact, and imagination. The librarian not only comes in daily contact with employees but also meets visitors to the library and represents the company at association and other meetings; a well-groomed person who is at ease in meeting people, and at the same time can put them at ease, is an asset to the organization. Alertness to current trends and to changing policies, plus the vision to see how these may affect the services to be given by the library, the collection of material, or a change in methods, are important factors in maintaining an efficient and effective department.

Nor can a librarian function adequately without a competent staff to see that the organization receives the maximum of service from its investment. Whether one, five, ten, or twenty staff members are required depend on many factors such as the size of the organization, whether or not it is a multi-plant corporation, how much service is expected, and by whom. The training of the library personnel depends on the division of duties each is expected to perform. A short bibliography on this subject will be found in a recent library publication.[9] Two or more types of education and/or experience often are complementary and indispensable. When industry insists that departments of science, of modern languages, and schools of business administration co-operate with library schools in training personnel to fill these positions, they will reap still greater benefit.

The library in a large organization is generally regarded as a distinct unit with the librarian responsible to an executive officer of the organization. In a chemical company, the library may be a division of the research department with the librarian reporting to the Research Director, inasmuch as the greater part of the work is in the obtaining and co-ordinating of material for the research department. The management, the assignment of work, the acquisition of material, the handling of all problems bearing on the efficient operation of the library, together with competent service to all other divisions, is the responsibility of the librarian. This corresponds to the work done by a divisional chemist or engineer. Consequently, the position held by the librarian should be equivalent to that of a divisional chemist and recognition of this should be given by the organization.

REAR VISION MIRROR

An analogy has been drawn between library service and the rear vision mirror of an automobile. "In order to go forward safely, the driver must know what is on the road behind." [10] Rapid progress in all fields of science, some of it revealed only within the last six months, as well as economic, social, and legislative changes, have increased immeasurably the amount of information necessary to the successful functioning of an organization.

The library's part in this is to acquire and to disseminate this information. The service given by the library is not limited; it extends to every department, to every individual within as well as to some outside the organization. Because of contacts with other libraries, knowledge of where elusive information may be found, and cognizance of source material, the library is the logical clearing house for all requests for factual matter.

To carry out the work of an information center successfully, the library should have a strong collection in the chief subject interest, a representative collection in related fields, an adequate staff, and a head librarian who is pleasing, alert, progressive, and has executive ability coupled with a practical outlook. With such a combination, a company may well point with pride to the library, a real liaison with service as its function.

BIBLIOGRAPHY

[1] Goff, Marie S. "Books—or Bunsen Burners," *The Dupont Magazine*, v. 38, pp. 15-17, Jan.-Feb. 1944 (reprinted in *Special Libraries*, v. 35, pp. 452-455, Nov. 1944).

[2] Cole, Betty Joy. "Methods of Presenting Information," *Special Libraries*, v. 34, pp. 486-488, Dec. 1943.

[3] Strieby, Irene M. "Getting News to the Research Staff," *Journal of Chemical Education*, v. 21, pp. 372-373, Aug. 1944.

[4] Shorb, Lura and Lewis W. Beck. "Opportunities for Chemists in Literature Service Work," *Journal of Chemical Education*, v. 21, pp. 315-318, July 1944.

[5] Rider, Fremont. *The Scholar and the Future of the Research Library*, New York, Hadham Press, 1944.

[6] Bush, Vannevar. "As We May Think," *Atlantic Monthly*, v. 176, pp. 101-108, July 1945 (condensed and reprinted in *Life*, v. 19, p. 112-124, Sept. 10, 1945).

[7] Ellwood, Maude W. "Building a Chemical Library," *Chemical Industries*, v. 53, pp. 189-193, Aug. 1943.

[8] McColvin, E. R. "The Education and Status of Special Librarians," *Proceedings of the 19th Annual Conference, Association of Special Libraries and Information Bureaux*, pp. 65-70, Dec. 9-10, 1944.

[9] Strieby, Irene M. "The Meaning of Technical Library Training," *Library Journal*, v. 70, p. 463-467, May 15, 1945.

[10] Foreman, Phyllis. "Knowledge is Power," *Hydro News* (Toronto), v. 32, pp. 9-11, 25, April 1925.



Open stacks for personnel make this room a spot of real activity.



Dupont Company

Draperies at New York's Hotel Astor are treated to make them flameproof.

FLAMEPROOFING AGENTS For Textiles, Paper and Wood

by REID G. FORDYCE, Central Research Department
Monsanto Chemical Company
Dayton, Ohio

COMPETITION FROM NON-FLAMMABLE SYNTHETICS is stimulating interest in flameproofing agents for natural cellulose products. The materials described here constitute the basic components in practically all flameproofing formulations.

FUNDAMENTALLY, no material can burn unless it is raised to its ignition point in the presence of oxygen or oxygen-containing compounds. Common sense and our own experience tells us that actual ignition occurs readily in the presence of an open flame, spark or other source of intense concentrated heat. Regardless of how the fire is started, however, the temperature of the material is really the controlling factor. A graphic illustration of this fact is the simple demonstration of boiling water in a paper bag over an open flame. In a sense the paper bag has been flameproofed due to the cooling action of the water which prevents the paper from reaching its ignition temperature. This cooling principle while universally employed in extinguishing fires has not been successfully applied to flameproofing.

It is well known that there is a wide variation in the ignition temperatures and flash points of different materials. This variation is apparently due to the heat and chemical stability of the material. Thus, wood for example, starts to decompose and liberate combustible gases below the ignition point and it is these gases which are first ignited when burning occurs. Chemical instability alone will not cause combustion; it is also necessary that the liberated gases be flammable. Hence, ammonium salts are notoriously unstable but are widely used as flameproofing agents since on decomposition the non-flammable gas, ammonia, is liberated.

Just why certain vapors like gasoline and benzene are highly flammable and others like chloroform and carbon tetrachloride are not, can not be discussed here, but again the difference relates to the chemical stability and structure of the substance. Thus, in any consideration of flammability it is apparent that the chemical nature of the materials plays a vital role.

MECHANISM OF FLAMEPROOFING

In spite of the fact that certain flameproofing materials like ammonium chloride (sal ammoniac) and borax have been known for hundreds of years there is still disagreement among workers in the field as to the mechanism by which they protect flammable materials. At present, three different theories have been advanced.

The first explanation is the obvious one that ammonium salts and the like decompose to give non-flammable gases, thereby excluding oxygen from the material. If this were the entire story, however, certain other salts, notably carbonates and bicarbonates, would be expected to be much more effective than they are.

The second explanation postulates that a low melting material like borax melts at elevated temperatures and spreads out over the surface as a thin protective skin thereby preventing free access of oxygen to the combustible material. In the case of borax this is probably true. Finally, it has been suggested that the flameproofing agent alters the course of the chemical reaction during combustion, i. e., during rapid oxidation, so that less flammable gas is produced and more carbonaceous (charred) material and more water are formed. In the case of acidic materials like di-ammonium phosphate and ammonium sulfamate a reaction with the cloth or wood is possible and tends to support the last theory.

FLAMEPROOFING MATERIALS

A great deal of time and money has been spent by various firms to develop flameproofing materials particularly for textiles, paper, wood and other cellulose products. From the myriad patents and literature on the subject the rather startling fact emerges that very few new effective flameproofing agents have been developed. In fact, the materials to be described used alone or in various combinations constitute the basic components in practically all flameproofing formulations. One reservation must be made: Owing to war-time secrecy orders, new effective flameproofing agents may have been developed during the present emergency which have not been reported in the literature. *(Continued next page)*

This article is a condensation of part of a paper presented Oct. 19, 1945, before the Ohio Fire Chiefs' Association in Columbus, Ohio.

1. *Diammonium phosphate,* $(NH_4)_2HPO_4$. This salt is usually applied in aqueous solution by dipping canvas and other textiles to be treated. About 15% by weight of the cloth is required to give effective fire prevention and to prevent afterglow. Smaller amounts of diammonium phosphate give protection of decreasing degree. This material has the disadvantage of being water soluble, hence the fabric must be retreated after it has been wetted.

1. *Diammonium ethyl phosphate,* $(NH_4)_2C_2H_5PO_4$. This salt is applied in the same way as diammonium phosphate and exhibits the same degree of protection. This material does not harshen the treated cloth as much as D. A. P. and gives a better "hand." It is, however, more expensive and is also water soluble.

3. *Boric acid—sodium borate,* $H_3BO_3—Na_2B_2O_4$. This material is also applied in aqueous solution and requires slightly more than 25% by weight for fire protection. It does not eliminate afterglow.

4. *Ammonium sulfamate.* $NH_4SO_3NH_2$. This is one of the more recently developed flameproofing materials and is likewise applied in aqueous solution, usually until 15-20% by weight is absorbed on the cloth. It imparts excellent flame resistance and fair afterglow characteristics. It is also water soluble, however, and hence does not give a permanent treatment.

5. *Chlorinated paraffin and antimony oxide.* This formulation possesses the advantage of water insolubility but is more difficult to apply to the fabric. It imparts excellent flame resistance, good waterproofing, and fair afterglow properties.

6. *Resin impregnation.* The use of fabrics impregnated with resins is another recent development of considerable interest. A number of new synthetic materials with good flameproofing properties have been developed within the past few years, and the application of these to inflammable base materials, such as, for example, textiles, and paper, is undergoing rapid developing at the present time. Treatment with some of these compositions is permanent, the flameproofing action persisting even after numerous washings or drycleanings.

7. *Proprietary compositions.* A large variety of proprietary mixtures have been marketed for fireproofing nearly any base material. Some of these are quite effective, while others are nearly worthless. Since compositions vary greatly, no generalizations can be made, and it is necessary to test materials of this type carefully, under the intended conditions of use, to determine whether or not satisfactory performance may be expected of them.

The foregoing materials and ammonium chloride (NH_4Cl) are also used to some extent for impregnating wood to give flame resistance. To force the material in the structural interstices of the wood suitable equipment for alternately applying vacuum and pressure has been developed. In the case of wood, since only the surface layer must be protected, about 10% by weight of flameproofing agent is required. It should be pointed out that, except for special cases, the cost of treating wood in this manner is relatively high at present.

In many formulations, other materials besides the basic components described above are also added. These include: ammonium sulfate, ammonium carbonate, aluminum hydroxide, zinc sulfate, magnesium sulfate, sodium phosphate, zinc chloride, urea and others.

Finally it must be stressed that while materials treated with these agents are flame resistant as tested by standard methods, they are not fireproof in the sense of asbestos and all will burn if heated to high enough temperatures. The effect of the flameproofing agent, therefore, is to greatly reduce the rate of combustion of the treated material and to reduce afterglow to a minimum.

NATURE OF FIBRE IMPORTANT

In discussing the flameproofing of textiles a word about the flame resistance of the newer synthetic fibres is in order. At the outset it should be pointed out that the physical form of the fibres greatly influences the potential fire hazard. Thus, a very long pile brushed angora wool sweater obviously presents a greater hazard than a hard square weave of the same material. The fact that a serious fire accident occurred in the case of the sweater does not mean that Angora fabrics must be condemned *per se,* but intended applications must be studied carefully from the standpoint of the degree of hazard involved. This principle is of vital importance.

Acetate and viscose rayons do not exhibit any greater flammability than cotton of the same physical form. Nylon textiles are slow burning materials and offer less fire hazard than cotton. Synthetic fibres sold commercially as Velon, Vinyon, Saran and Geon contain high amounts of chlorine and, therefore, are quite safe from the point of view of flammability since they are self extinguishing, and very useful fabrics are being made of these materials. The use of glass fibres woven into fabrics of various types has provided American industry and homes with useful new textiles which are truly nonflammable.



This woman welder wears a new type fabric glove, apron and cap treated with a fire retardant chemical to guard against sparks.



Dupont Company

This pair of flameproofed overalls will char but cannot be set afire. Flameproofing treatment is repeated with each laundering.

Marketing Chemical Specialties

by EDWARD DESPRES
Velsicol Corp., Chicago, Ill.

FULFILLING THE FUNCTIONS OF RECONNAISSANCE, intelligence, and liaison between the company and its customers, the marketing department is called upon to do everything from rendering technical service to playing golf. This is true for basic chemicals, but it is even more so for specialties.



The "personal" element is important, but don't imagine that it can replace customer service.

WHAT IS marketing? What are chemical specialties? Both terms have connotations which vary widely depending upon the groups to which they are addressed. For the purpose of this article, marketing may be defined as the sum total of those activities which find outlets for both the company's present and potential products. A definition of chemical specialties will be considered later. These activities make it necessary for the sales department to have extensive relations with departments as apparently remote as production, chemical research, patents and traffic. Different techniques are called for in marketing the company's present and potential products: The former requires a straight selling job; the latter involve exploration and campaign planning, the utilization of methods found valuable in the past and the development of new strategies suited to the new products. Although there may be some fine distinction drawn between marketing and selling, herein the terms will be used interchangeably.

Certain basic considerations must be taken into account in connection with the marketing policies pursued by a given company—policies dictated by many things over which the individual company has little or no control. Large and small organizations are subject in varying degrees to such things as reconversion, the business cycle, new inventions, and competition, to mention only a few, which determine to a large extent marketing policy and procedure.

In the four years that have elapsed since Pearl Harbor, it is perhaps only natural that marketing as a separate function has been neglected. The present is an ideal time for the rejuvenation of this department. To gain a fresh perspective on marketing methods, it is necessary to survey conditions prevailing in the past. The problem of war was fundamentally one of production, whereas peacetime problems center about distribution. Conversion is not altogether concerned with technical and mechanical change-over: Retooling can be psychological as well as mechanical. It is necessary for corporations to eliminate many of the war-born mental habits and attitudes that a seller's market has given rise to. Uncle Sam did not have to be "sold," but now the salesman's job and the functions of the marketing department are again more vital. In a sentence, perhaps, the most important task of the marketing department is to make the company customer-minded.

PERSONAL BASIS

A number of questions arise immediately: What is our position in regard to competition? What does the public expect in the way of new products? How about prices, discounts, service, etc.,? Will old methods suffice? What lessons has selling for a war market taught us? The answer to this last question involves a paradox. The very impersonality that was such a feature of most war orders has stimulated in us the idea that our future sales efforts must be put on a more personal basis. Friendships arising out of mutual interest and advantage must be cultivated. Customers must be encouraged to look to their sources of supply, not as the XYZ Corporation, but as Tom Jones, or better yet, as Tom. Trade associations, conventions, and, yes, the golf links can be made into even more effective instruments of business-getting than they have in the past. Personally, we look for no revolutionary changes on the marketing front. We are of the opinion that yesterday's methods with necessary modifications will fit tomorrow's markets.

It may be well to consider briefly the work in which Velsicol is engaged so that its problems may be correlated with those of other companies of a similar nature. Established in 1933, the Velsicol Corporation is engaged in the manufacture of hydrocarbon resins, aromatic petroleum solvents, polymethylated naphthalene insecticidal agents, core oils, and other special chemical compounds. All of these products with the exception of core oils, which are totally consumed in the foundry, come within the category of raw materials and are used as components in the manufacture of a wide variety of products. Here it may be well to point out that in contrast to the marketing of the so-called heavy or standard chemicals, chemical specialties present certain distinct problems. On the one hand are the basic materials—the standard, elementary building blocks in which the buyer's choice is limited or non-existent; and on the other hand are those more highly finished products used as adjuncts, more often than not, with these other chemicals to obtain certain specific properties or ends in the finished products. Basic chemicals are so well standardized and their markets so well-known and exploited that they do not offer material for discussion.

PROBLEMS WITH SPECIALTIES

The field of chemical specialties is limited in some products—certain resins—for example—to a very narrow field, indeed. There comes to mind a resin developed specifically for printing inks. Exhaustive laboratory tests were conducted and small batches of ink were used on an experimental scale in a local printshop. These tests indicated the superior properties of the resin, viz., quick drying, hard finish, and good color and odor. Before starting large scale manufacturing, we made a rather intensive survey of the market, estimating the potential volume and dollar value of sales. The source of these estimates included questionnaires sent directly to the trade, and statistics obtained from numerous trade and government publications. When the printing ink manufacturers were approached, the interest in and sale of this resin demonstrated that a product will find a market, providing necessary preliminary spadework is well thought out and executed. Manufacturers are alert as never before to the need for and possibilities of product improvement. A technical service department is also an invaluable asset in making known to customers the technical knowledge that assures the most effective use of a company's products.

The marketing of chemical specialties

requires rather elaborate machinery, and in such elements as research, product improvement and control, technical service, and library facilities for the supply of data are all functional parts of the marketing department organization.

In the United States we sell through our technical sales force direct to the manufacturer as well as through jobbers and dealers organized on a territorial basis. Our export business, which has been curtailed because of the war, has been handled through agents in many parts of the world. In a company of our size marketing and research staffs are intimately related, and flexible arrangements for exchange of data are the keynote. In connection with our research laboratories we maintain several fellowships at universities where many of our products are put to practical tests and evaluated, the results of this work being utilized by our marketing department.

MARKET INFORMATION

At this point, it may be well to mention methods and sources of analyzing markets. We use government statistics compiled by the U. S. Departments of Commerce and Agriculture, Chamber of Commerce, numerous local governmental and trade agencies, and trade and scientific publications. Our marketing department, in conjunction with our salesmen, is in constant touch with customers and jobbers to find out if our lines are acceptable in regard to price, quality and service, what new items would be desirable and what improvements might be made in our products. The marketing department also investigates the merits of different companies or institutions as channels of distribution.

In this connection the advertising department, closely associated with marketing and sales, is kept in constant touch with all developments relating to the company's products so that it may purvey the news and information concerning them at the proper time and in the most effective media. Supplementing advertising in trade and technical journals, we place great store in well planned direct mail campaigns and sales correspondence. Complete descriptive and technical literature concerning our products is another feature for which the marketing organization is responsible, as is the technical service which is rendered our customers.

The marketing of insecticides illustrates many of the typical problems confronting the sale of specialty products. The Velsicol insecticidal materials are not finished insecticides in the sense that they are packaged and sold directly to the consumers as household or cattle sprays. They are, however, sold as toxicants, repellents, solvents, and extenders to the insecticide manufacturer as components his spray formulations. Competition is not only between different products of the same essential nature but also between products of totally different chemical composition.

There is also a high degree of specialization among insecticide manufacturers, some producing only household sprays, some making livestock sprays and/or agricultural insecticides, and still others selling a complete line. Agricultural insecticides are in themselves a numerous class, there being almost as many of these as there are crops, and in this classification sprays compete with dusts, and both compete with fumigants, all of which are beset with many technical problems.

The discovery of new insecticides and techniques of applying them have so intrigued the public that now the subject of insecticides vies in public interest with plastics and electronics. To exploit this situation properly, extensive research and laboratory work are necessary. Many months often elapse before new discoveries of possible value are developed, and more time must then pass before these new products can be properly evaluated. The steps antecedent to the final sale are all part of the marketing picture, the marketing department being concerned with the conception of the material in the test tube to its final distribution in drum or tank car. Here we have the old question of the hen and the egg. Are products developed in the laboratory for specific uses and markets, or are specific uses and markets found for new products? Actually it works both ways, and the marketing department is midwife in each instance as it finds markets for new laboratory products for which no use is known, and it is also the source of ideas for new materials for which a market is waiting.

PRODUCT EVALUATION

The birth rate of new compounds in the laboratory is high, and the mortality tables show a corresponding degree of fatalities. The one in a hundred that survives is the marketing department's problem child. At this point the marketing department marshals its forces into operation and attempts to determine by established procedures what the possibilities are for the new insecticides acceptance. Pertinent facts and figures are compiled and examined, total past sales calculated, percentage of market which the new product can win estimated, advantages and disadvantages of competitive materials weighed, and possibilities of winning new markets and finding new outlets studied. For this purpose the marketing department must have a considerable body of information and should possess much or all of the following: statistics from the Departments of Agriculture and Commerce; entomological reports, based on the work done with the product in the field and laboratory tests carried out under the supervision of university fellowships; patent and trademark data; and formulations which enable it to submit samples to prospective customers. A report is drawn up using this data on the basis of which the sales manager will make his decisions regarding the product.

Resins are another important product which have their own marketing problems. Resins find their most important market in the protective coatings industry. The following list will suggest the range of this market: paints for all uses, sanitary can lacquers, aluminum vehicles, toy enamels, floor and trim varnishes, etc. Other important outlets for our resins are in the manufacture of printing inks, for impregnants, binders, furniture rubbing varnishes, and industrial, architectural, baking, alkali and acid resistant enamel. As in the field of insecticides, before any resin is put on the market, it is fully evaluated and then offered to the paint, varnish and allied industries for their approval. If it is not found adaptable for one part of the trade, it is then offered to another type where there is a possibility that it may fit.

Velsicol core oils are a specialty product which requires a great amount of personal salesmanship and service to adapt them to the needs of individual foundries pouring ferrous and non-ferrous metals. It is the marketing department's responsibility to see that the Velsicol core oils are properly introduced to the foundry industry. For this purpose an extensive survey was made of foundries in all parts of the United States. This survey included an analysis of the foundries by type of metals poured, tonnage of castings, type of sands used, and other relevant data. After classifying the material appropriate samples of core oil and information were offered the foundries and wherever samples were submitted, a thorough follow-through and check-up of results were made. This practical form of marketing resulted in greater sales volume.

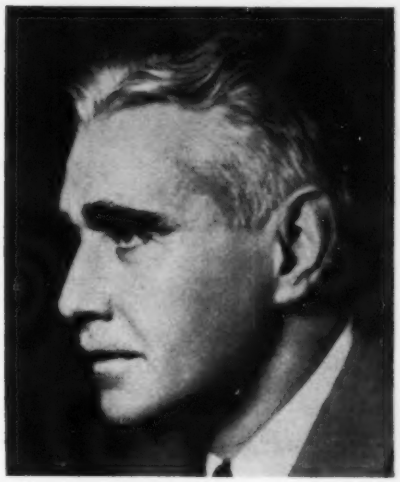
SUMMING UP

To sum up then, the marketing of chemical specialties does not differ radically from that of other commodities of a similar nature. Narrowly considered, marketing is solely a job of fact finding and presentation, analogous to the reconnaissance and intelligence divisions of the army. Broadly conceived, it calls for judgment, interpretation, imagination, and professional ability, and on the basis of its findings policies are decided that largely affect the company's success. Marketing is not a rigidly fixed or deeply grooved activity; its arrangements are flexible, and it is an integral part of the combined operations intended to foster the sales, growth and goodwill of the company.

HEADLINERS in the NEWS



CHARLES P. WALKER, JR., has been elected president of the Citro-Chemical Corp. of America, subsidiary of Emerson Drug Co. He was formerly with Merck & Co.



E. CLIFFORD WILLIAMS, who has been appointed vice-president in charge of research for Schenley Distillers Corp., had formerly been with General Aniline & Film.



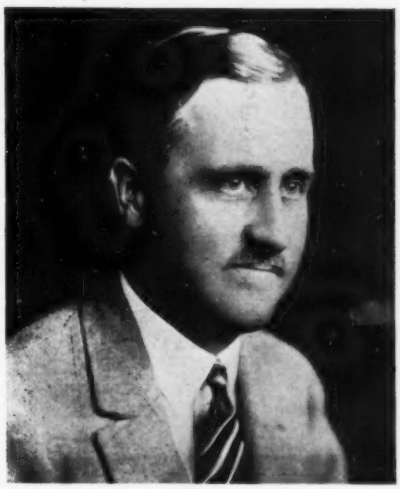
FRED C. ABBOTT has been appointed manager of the new products division of Pennsylvania Salt Manufacturing Co. He has been with the company since 1943.



ROSS W. THOMAS, manager of the chemical products department of Phillips Petroleum Co., has been named manager of research and development.



L. J. BRADY, who has been a fellow at the Mellon Institute, is now director of the newly organized physical research laboratory of Hooker Electrochemical Co.



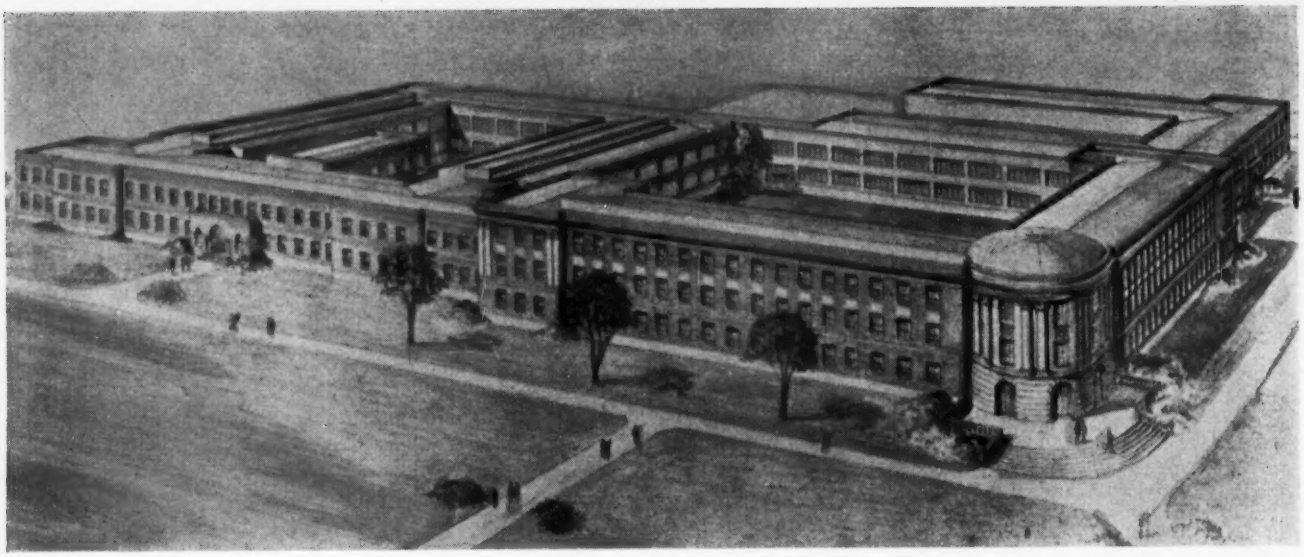
ROGER ADAMS, head of the chemistry department at Illinois, and chairman of the board of A.C.S., has been appointed special adviser to Lt. Gen. L. DuB. Clay.



CHARLES H. GANT will manage the Parlin, N. J., plant of the Hercules Powder Co. He was recently manager of the Badger Ordnance Works.



WENDELL M. STANLEY, biochemist of the Rockefeller Institute for Medical Research, has been awarded the William H. Nichols Medal of the New York Section A.C.S.



Calco Plans Research Center

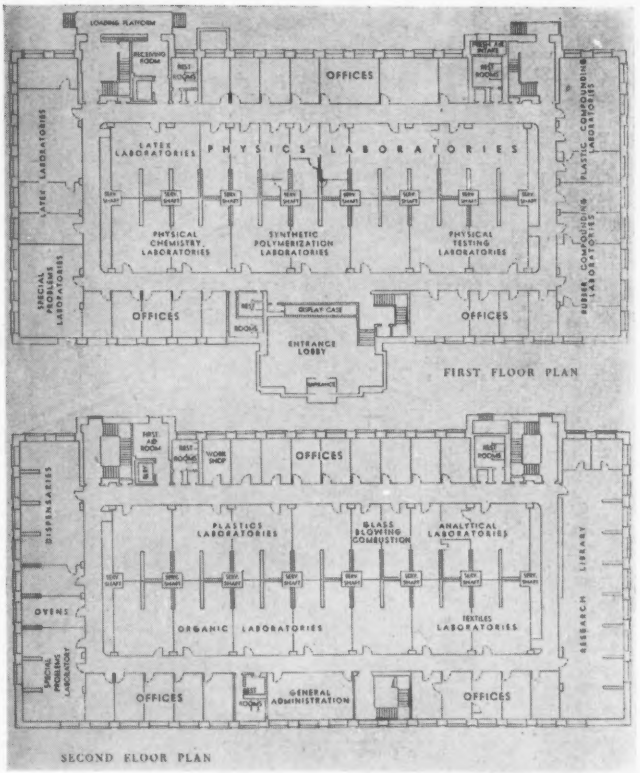
Ground has been broken for the first units of a new research and technical sales service center for the Calco Division, American Cyanamid Co.

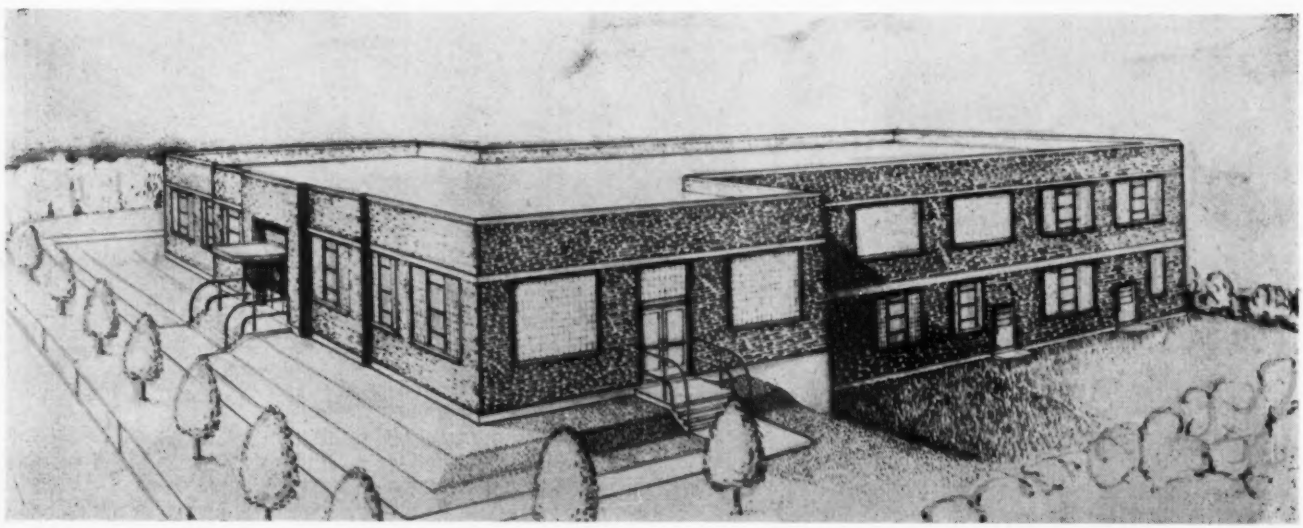
Laboratory Floor Plans

Presented at right are the floor plans of the recently constructed research laboratories of the Firestone Tire and Rubber Company in Akron, Ohio.

Hercules Plans Laboratory

Architect's drawing, below, shows the new plastics laboratory for development and research work to be built at the Parlin, N. J., plant of Hercules Powder Co.









AIC Hears Smyth

Seated at the speakers' table in the usual order are: Arthur Schroder, executive director of the American Institute of Chemists; H. D. Smyth, chairman, Department of Physics, Princeton University, and author of the official report entitled "Atomic Energy for Military Purposes"; and A. Lloyd Taylor, director of research, The Oakite Co., who is chairman of the New York chapter of the institute. Dr. Smyth addressed the group on "Atomic Energy" and led a discussion, answering questions from the floor. Chairman Taylor presided.





Chemical Industry Medal Meeting

At a joint meeting sponsored by the Society of Chemical Industry held with the American Chemical Society and the American Institute of Chemical Engineers, The Chemical Industry Medal for conspicuous service to applied chemistry was presented to Sidney D. Kirkpatrick, editor of Chemical & Metallurgical Engineering. Shown here, left to right, are: Albert E. Marshall, Rumford Chemical Works, who spoke on "The Professional Side of the Medalist"; and Mr. Kirkpatrick, who discussed the topic "Science vs. Politics." Below are: Howard C. Parmelee, editor emeritus of Chem. & Met., who presented "The Personal Side of the Medalist"; and Norman A. Shepard, American Cyanamid Corporation, who presented the medal. Chairman Francis J. Curtis presided.

North Jersey Section ACS

Seen here chatting before he made his speech to the North Jersey Section of the American Chemical Society, at a recent meeting, is J. Frederick Walker, E. I. du Pont de Nemours & Co., left. He is talking to Robert E. Waterman, vice-president of Schering Corporation and chairman of the section. Dr. Walker addressed the group on the subject of "Formaldehyde." Following this main talk the meeting divided into two groups. The physical and inorganic group, under the chairmanship of W. O. Baker, was addressed by Harold G. Cassidy, Yale University, on "Chromatography." The organic and biological group, under the chairmanship of Frank R. Mayo, heard a lecture on "Influence of Size and Position on Chemical Reactivity," by Alsoph H. Corwin, Chairman of the Department of Chemistry, The Johns Hopkins University.

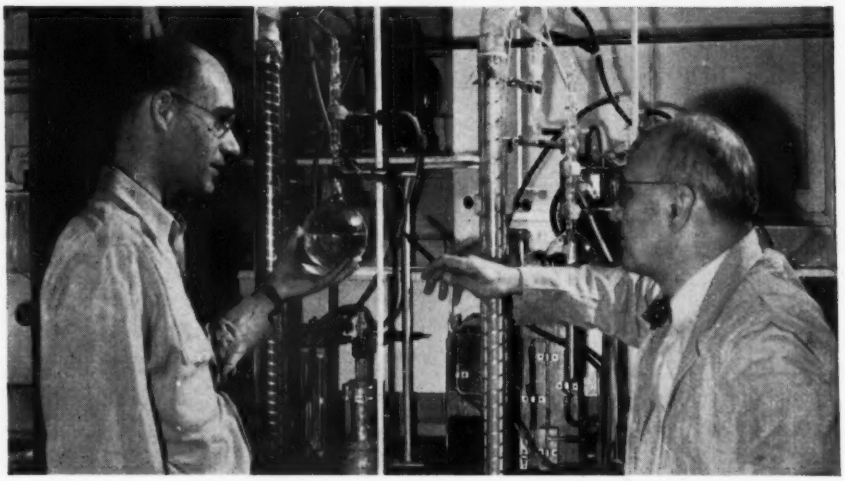




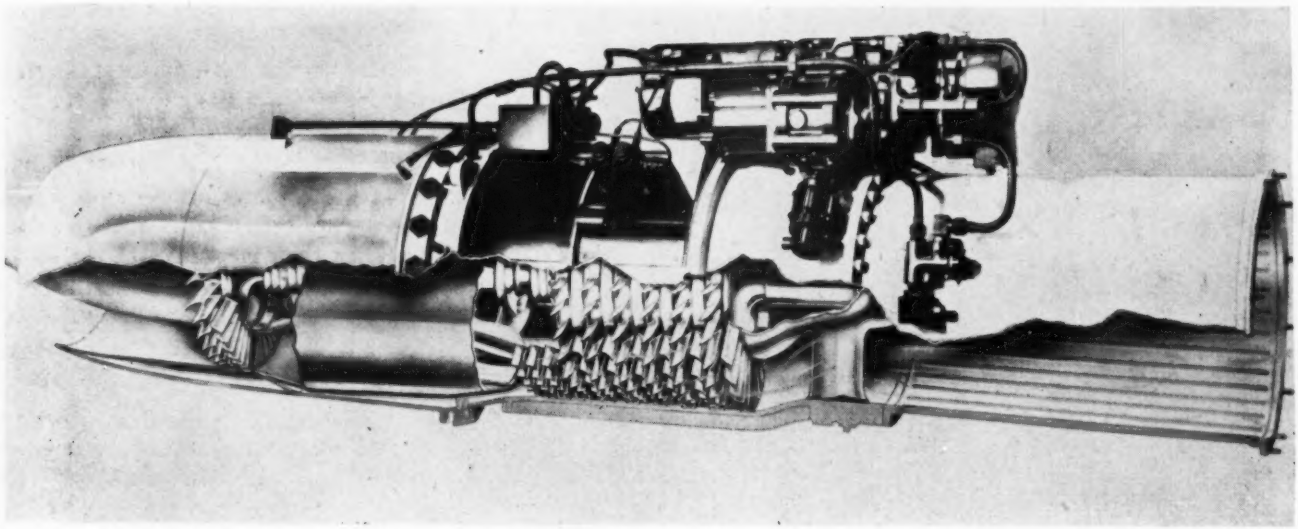
Executives Cited By Army

Army Certificates of Appreciation were presented to 10 men who served on the Chemical Advisory Committee of the Army-Navy Munitions Board. Shown in first row, left to right, are: Charles S. Munson, Air Reduction Co.; Harry L. Derby, American Cyanamid and Chemical Corp.; Brig. Gen. Alden H. Waitt, Chemical Warfare Service; and Warren N. Watson, Manufacturing Chemists' Association. In second row are: Lammot Du Pont, E. I. du Pont de Nemours Co., Inc.. Col. Harry A. Kuhn, CWS; James W. McLaughlin, Bakelite Corp.; and George W. Merck, Merck & Co., Inc.

Monsanto Produces Synthetic Caffeine



Oliver J. Weinkauff, left, and Lucas P. Kyrides, right, are seen here discussing the improved process for volume production of synthetic caffeine, which is being undertaken by the Monsanto Chemical Company. Dr. Weinkauff developed the process under the supervision of Dr. Kyrides, who is director of organic research.



Jet Engine

Utilizing cheaper and more available fuels than the regular piston-driven engines, the jet engine will drive aircraft faster than ever before. The incoming air is compressed into the combustion chamber by an axial flow compressor, mixed with fuel, and burned. The combustion products escape through a turbine which drives the compressor, and the residual energy is utilized as jet power. Operating similarly, the gas turbine will find wide industrial use.



THE SANTOLITES

Condensation Products of Aromatic Sulfonamides with Formaldehyde

CHARACTERISTICS OF SANTOLITES

	MS-80% SOLN	MHP	K-5
Color and form	Light colored viscous liquids	Hard, nearly colorless resin	Clear, light yellow sticky resin
Specific gravity at 25° C.	1.2098 (Approx.)	1.350 (Approx.)	1.3022 (Approx.)
Refractive Index	1.545 at 25° C. (Approx.)	1.4295 at 25° C. (25% in normal Butyl Acetate) (Approx.)	1.5450 at 50° C. (Approx.)
Solubility	Soluble in practically all organic solvents except petroleum hydrocarbons and varnish oils.		
Retentivity in Cellulose Acetate†	Over 100	Over 100	Over 100
Retentivity in Cellulose Nitrate†	Over 100	Over 100	Over 100
Acid Number	Neutral	Neutral	10 Max.

SANTOLITE MS-80% SOLUTION — Supplied at 80% solids in solution with 20% normal Butyl Acetate also as 100% solids.

†*Retentivity is given in parts per 100 parts by weight of the Cellulose Nitrate or Cellulose Acetate.*

Even if you don't make nail polish, the flexibility, hardness and lack of brittleness of Santolite MHP is impressively demonstrated daily on thousands of typewriter keyboards — one of the largest "proving grounds" in America. Certainly, when typists' fingers can take over 380 nail shocks a minute and stay well groomed, it is definite evidence of the superiority of the Santolites in the formulation of lacquer coatings.

This example of proof-in-use makes further investigation a point of business wisdom, if you are interested in lacquer coatings for use as a lustrous product finish. Nail polish is only one special application. A far greater use is found in the manufacture of lacquer coatings for moisture-resistant, heat-sealing cellophane. Other uses will doubtless suggest themselves when you consult the chart of characteristics at the left.

If interested in experimenting with one or more of the Santolites,* we'll gladly send samples. Just contact the nearest Monsanto office or write: MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, San Francisco, Seattle, Montreal, Toronto.

**Reg. U. S. Pat. Off.*

MONSANTO CHEMICALS
SERVING INDUSTRY... WHICH SERVES MANKIND

BETWEEN THE LINES

Refractory Magnesia Outlook

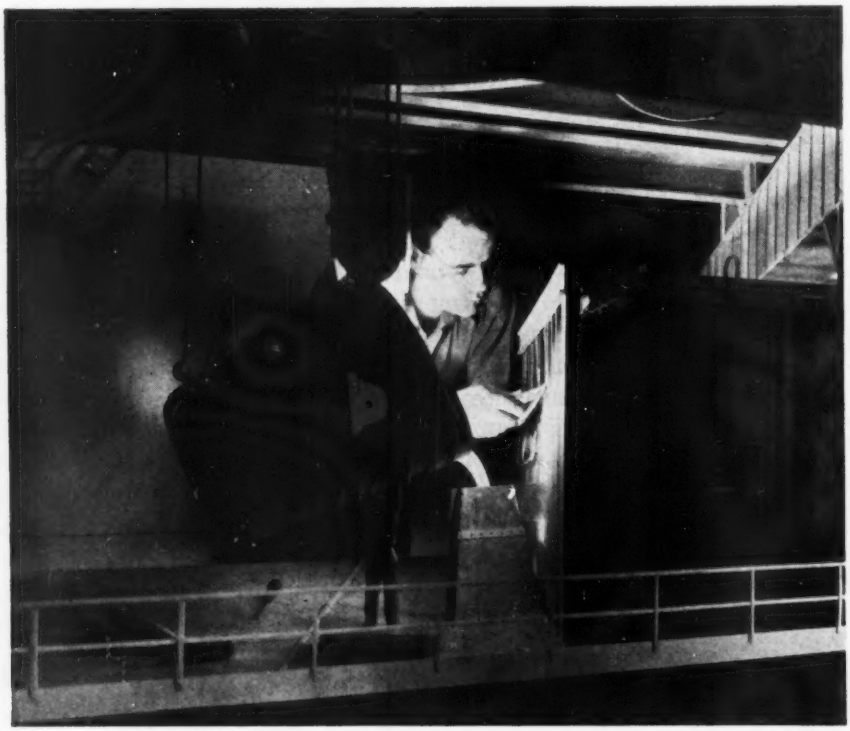
Anticipated continuation of high level steel operations should keep the demand for basic refractories at close to wartime levels. American producers, however, will have to compete again with foreign sources, especially on brick-grade magnesia, and their relative position will be determined by production and delivery costs and import duties.

THERE is an obvious relationship between the demand for steel and the degree of activity in the basic refractory industry. Basic refractory brick, dead-burned dolomite, dead-burned grain magnesite and allied refractory products are used in the masonry linings of metallurgical and industrial furnaces.

The U. S. Tariff Commission has recently completed an industry survey of refractory magnesia, while earlier the Office of Price Administration had occasion to go into many phases of the industry in connection with its war-time pricing schedules. From these and other sources, it is possible to build a general picture of the industry, its problems and outlook.

Magnesia is the oxide of the metallic element, magnesium. However, while the magnesium and magnesia-producing industries are closely related process-wise, with the exception of the Permanente Metals Corp. in California there is no apparent corporate relationship between them.

"Before World War II," according to the Tariff Commission report, "refractory magnesia in the United States and elsewhere was obtained chiefly from the natural ore known as magnesite (magnesium carbonate, $MgCO_3$). Even before the war, however, other sources of magnesia, principally sea water and the ores brucite and dolomite, were coming into use in this country."



Refractories industry activity largely follows the steel curve. Open hearth furnaces, such as model above, are biggest users of magnesia.

There is also another difference in the present situation of the two industries, revealed by the Tariff Commission study: while wartime expansion of the magnesium metal industry has been largely through Government investments, private capital has been more generally responsible for the expansion of the magnesia industry. Thus the postwar outlook for the refractory producers is unclouded by the problem of surplus plant disposal.

While the capacity of the refractory industry has been greatly expanded under war pressure, the excess capacity is considerably less than in many other war-expanded industries. It could well be that the civilian backlog demand for steel will support a refractory activity at close to wartime levels for several years.

There is another factor in the immediate outlook. During the early part of the depression of the 1930's, repairs to steel furnaces were deferred. After 1933 the apparent consumption of magnesia exceeded steel output, which indicated that the steel industry was making long-postponed repairs to its furnaces and other equipment. Something of a parallel exists in the present situation where wartime pressures may have forced a postponement of repairs and restoration of furnaces not absolutely essential at the time.

The prewar ratio of magnesia consumption to steel was approximately 4.8 pounds of refractory magnesia per ton of steel produced. During the war this increased to 7.6 pounds per ton of steel, and the reasons in part tend to substantiate the speculation as to possible extensive demand in the coming period for repairs and rehabilitation: inexperienced labor, and the poor quality of steel scrap, which implies that the furnaces got less than expert care and certainly had hard usage.

Production of crude magnesite in the United States averaged 200,000 short tons before the war. During the war, in 1943, it increased to more than 750,000 tons. The latter figure includes the output of brucite and dolomite used in the manufacture of basic magnesia refractories. Of the total, about 250,000 tons of magnesite was used in production of magnesium metal and caustic calcined magnesia.

A major feature of the wartime expansion of the magnesia refractories industry both here and in the United Kingdom was the increased utilization of sea water as a raw material. The largest of the seawater plants is stated by the Tariff Commission to be the new one of the Northwest Magnesite Co. in New Jersey. However, production from seawater has also been greatly increased in California, both by Westvaco and the new plant of Permanente Metals Corp.

The share of Northwest Magnesite Co. in the total domestic production of refractory magnesia from all materials is stated by the Tariff Commission to have been, in 1944, approximately 65 percent. Apart from refractory magnesia proper, the production of Basifrit, a formula product derived from dolomite and brucite, has been expanded during the war, brucite being brought to the Ohio plant from Nevada deposits. Production of Staset, another formula product, has undergone an expansion also. The Government encouraged two new concerns to enter the magnesia field, in Michigan, the first

ONE OF A SERIES OF PRODUCT PROBLEMS
. . . . . SOLVED WITH A VICTOR PHOSPHATE



HOW TO TAME A FLAME WITH PHOSPHATE

Victor ammonium phosphates have long been employed in fireproofing textiles, paper, wood, and other combustible products. Recently, a paper manufacturer came to us with a problem. In fireproofing a special paper, the drying cylinder became corroded and the paper was sticking.

Victor laboratories studied the problem from all angles—the fire resistance of the paper after treatment, the corrosion of the high temperature drying roll, speed of the rolls, the sticking of the paper—and finally came up with the solution! It was the use of Victor Flexible Fyrex, an ammonium phosphate compound containing a softening or plasticizing agent. The paper passed quickly and smoothly through the process; sticking to the hot drum ceased; the drum surface no longer corroded; and the paper came out with a natural feel and flame proofed.

Solving product problems is a major activity of Victor's laboratories. Next time you are confronted with a product problem, think first of a phosphate from Victor. It pays!

THINK *first* OF A PHOSPHATE . . . . *from* VICTOR

PARTIAL LIST OF VICTOR CHEMICALS

Acids . . . formic, metaphosphoric, oxalic, phosphoric, polyphosphoric.

Formates . . . aluminum, sodium, sodium boro-.

Metaphosphates . . . aluminum, ethyl.

Orthophosphates . . . ammonium, calcium, iron, magnesium, potassium, sodium.

Oxalates . . . calcium, sodium.

Phosphorus . . . (yellow)

Ferrophosphorus

Phosphorus Compounds . . . chlorides, pentoxide.

Pyrophosphates . . . calcium, sodium acid, sodium iron, tetrapotassium, tetrasodium.

Sulphates . . . magnesium, sodium aluminum.

VICTOR CHEMICAL WORKS
HEADQUARTERS FOR PHOSPHATES • FORMATES • OXALATES
141 W. Jackson Boulevard, Chicago 4, Ill.

NEW YORK, N. Y.; KANSAS CITY, MO.; ST. LOUIS, MO.; NASHVILLE, TENN.; GREENSBORO, N. C. PLANTS: NASHVILLE, TENN.; MT. PLEASANT, TENN.; CHICAGO HEIGHTS, ILL.

stated to have had only a small output, with the second scheduled originally to come into production late this year.

The major significant change in the industry during the war, according to the reports, has been the launching of Permanente's seawater plant in California and the acquisition of a brick factory in California by the same company to make refractory brick for use in the steel and nonferrous metal plants of the parent Kaiser organization. This was a wartime set-up, however, and the outlook, it seems fair to speculate, will depend on what happens to the war-born steel industry in the West.

Apart from magnesia, the most important materials used in the construction and lining of furnaces are chromite, silica, dolomite, and refractory clay, all of which are much cheaper than magnesia. Thus the position of refractory magnesia producers is somewhat affected by the possibility of substitution of other materials.

The maintenance grade of refractory magnesia proper, derived from magnesite ore, does not have to be of the same quality as brick grade. It is used to build up hearth bottoms and to repair the working hearth. Brick grade of magnesia in this country is derived from both magnesite and from seawater; all the seawater product, in fact, is brick grade.

Approximately half the refractory magnesia of brick grade used in the United States goes into magnesia brick proper, consisting wholly of magnesia, which brick are used in constructing the side, front and back walls of furnaces. The rest goes into "shapes" and cement. No other material is considered equally satisfactory where a refractory lining of a strongly basic character is required. Large quantities of the brick grade are also used in admixture with chrome to make refractory brick used in exposed areas of brickwork where spalling is likely to occur, chrome being a much cheaper material than magnesia.

The periclase grade of refractory magnesia is a very pure form burned at higher temperatures (1,560° to 1,760° C.) than for brick grade. Most of the resulting fabricated product is used for lining rotary kilns and electric furnaces operating at extreme temperatures. The total consumption of this grade brick is comparatively small.

According to the Tariff Commission survey, imports supplied the great bulk of the magnesia of brick-grade consumed in the United States prior to World War II, despite a duty equivalent to about 80 percent of the foreign value.

"Dead-burned dolomite," also classed as "double-burned" or "roasted" or "clinkered" dolomite, is made by calcining raw dolomite, itself a mineral composed of equal molecular proportions of carbonates of calcium and magnesium. It is used by spreading over the furnace bottom after each "heat" to compensate for losses of monolithic magnesite in the hearth surface. For each ton of steel produced in a basic open hearth furnace, as much as 30 pounds of dead-burned dolomite may be used as a substitute for, or as a supplement to, dead-burned grain magnesite. About ten producers, operating 14 plants in Ohio, Pennsylvania, West Virginia, Missouri, and Illinois, are closely identified with this particular product.

Dead-burned grain magnesite is used in brick form to line open-hearth steel and other metallurgical furnaces. In grain form it is used as a maintenance material to provide a protective covering for refractory brick. It is produced by high-temperature calcination of crude magnesite, brucite (magnesium hydroxide) or compounds produced from processing brines or seawater bitterns. Washington, California, Ohio, and West Virginia, are principal sources.

Special furnace magnesite is dead-burned grain magnesite specially sized and treated for quick setting, a hearth-ramming mix specially prepared with bonding material. Producers are found in Ohio, Pennsylvania and Maryland. Periclase has a magnesia content of 85 percent or higher. Production at one time was limited to California, but during the war one new producer located in Michigan and another put up a plant near Philadelphia. Two large consumers during the war operated captive plants in Washington state and New Jersey.

Referring again to the Tariff Commission findings, this agency reports that there is little information on which to base a comparison of domestic and foreign costs of producing brick-grade magnesia in the postwar period. The Commission says there seems to be little likelihood of large imports of the maintenance grade after the war. Imports of that grade were relatively unimportant before the war, and while the principal brick-making plants are on the eastern seaboard, hence accessible to imports, consumers are largely in the interior, where rail freight is an added factor to import cost.

Other potential foreign shippers after the war to United States markets are expected to be Manchuria and the Soviet Union. Prior to Pearl Harbor considerable quantities of Manchurian refractory magnesia were entering the United States at delivered prices somewhat lower than had earlier applied on the Austrian imports. What the position of Manchuria may be when the situation clears there is a guess at this stage, obviously. The competitive position, of course, relative to the American producers, will revolve around production costs, delivery costs and duty. For a time at least, the Soviet Union probably will need its magnesia products for its rehabilitation program, and if the Russian steel industry develops as some project it, the Soviet may be a large, steady consumer of these products.

SILICO FLUORIDES

SODIUM

ZINC

MAGNESIUM

AMMONIUM

HENRY SUNDHEIMER COMPANY

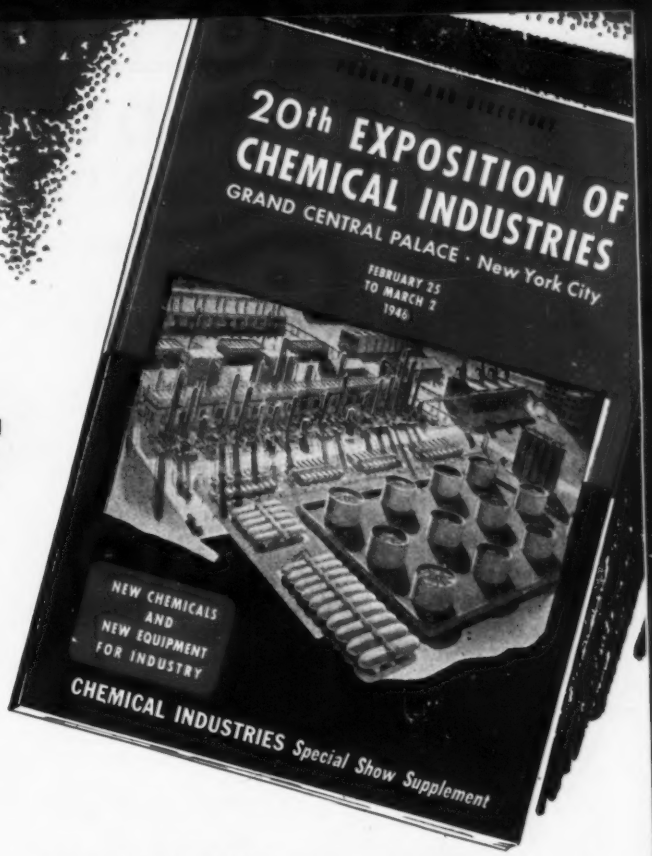
Established 1908

103 Park Ave. New York 17, N. Y.

The

MOST INFORMATIVE SHOW SUPPLEMENT EVER PUBLISHED!

NEW CHEMICALS AND NEW EQUIPMENT FOR INDUSTRY



10,000 DISTRIBUTION

To be distributed from the famous "New Chemicals for Industry" booth at the 20th Exposition of Chemical Industries, Grand Central Palace, New York City, week of February 25 to March 2, 1946, the most informative Show Supplement ever published.

Contains exclusive "New Chemicals for Industry" section listing new and improved products developed during the past two years. Gives present and suggested uses, formulas, names and addresses of manufacturers.

AND FOR THE FIRST TIME, an illustrated review of new and improved chemical process equipment, IN THE SAME ISSUE!

The 1946 Exposition of Chemical Industries Supplement will be kept for reference purposes for months to come. Its advertising pages will broadcast their sales messages until the next Show.

NON-EXHIBITORS should advertise in the Supplement because it is the most economical way to inform potential buyers at the Show of what's new in their product lineup. AND THE COST IS ONLY $100 PER PAGE!

EXHIBITORS can insure their exhibit investment by inviting visitors to see their booth at the Exposition. Same advertisement in the Supplement will also act as a reminder of their products and service after the Show is over. It will be kept for reference purposes and advertising in it will be active for months to come.

* * *

ACT NOW! Reserve your advertising space by writing or calling CHEMICAL INDUSTRIES, 522 Fifth Avenue, New York 18, N. Y., Murray Hill 2-7888; 309 West Jackson Boulevard, Chicago 6, Ill., Harrison 7890; 816 West Fifth Street, Los Angeles 13, Calif., Mutual 8364; 1105 Russ Building, San Francisco 4, Calif.

THE CHEMICAL BUSINESS MAGAZINE

Chemical Industries

ABP ABC

SUPPLEMENT RATES

1 Page $100
½ Page $60
¼ Page $35
COLOR—Standard red, orange, blue, green, yellow $40.

NEW PRODUCTS & PROCESSES

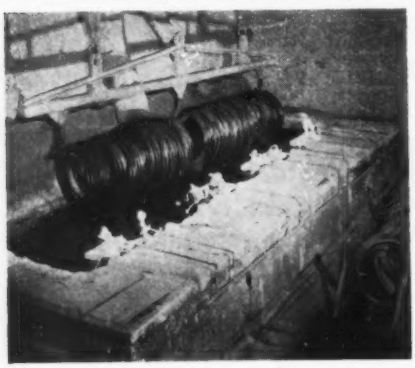
Sodium Hydride Process For Descaling Metals NP 210

The Du Pont Company has announced a sodium hydride process for descaling metals, which is in a sense an alkaline pickling bath which requires no electric current.

The process has many advantages over the usual acid pickling for alloy steels and particularly the stainless steels. These include a shorter time for descaling, elimination of the possibility of pitting the metal through careless practice, and saving of 2 to 3 per cent of the steel which may be lost through the action of acid.

The scale, reduced by the sodium hydride dissolved in caustic, virtually is blasted from the surface of the metal by the generation of steam in a subsequent water quench. Only a few seconds' dip in acid to brighten the surface remains to be done.

The sodium hydride bath is effective on such metals as nickel, cobalt, and copper as well as on alloy and stainless steels.



About 3,000 pounds of stainless steel wire is being lifted out of the sodium hydride bath.

Sodium hydride dissolves in molten caustic and the solution reduces iron oxide to metallic iron. The solium hydride reacts with the scale to form caustic soda, which is the material comprising the bath itself. The reaction:

$$Fe_3O_4 + 4NaH \longrightarrow 3Fe + 4NaOH$$

Thus, no undesirable impurities are added to the bath and the metal walls of the tank are not attacked.

Hydrogen Process NP 211

For small-scale uses of hydrogen, a convenient method for its generation is by the use of calcium hydride, offered commercially by Metal Hydrides, Inc.

Calcium hydride packed in small tin cans can be preserved indefinitely. When hydrogen is needed, a few holes are punched in the top of a can and the whole submerged in water. Hydrogen is collected in a rubber envelope as it is released. This acts as a simple gasometer to supply hydrogen at sufficient pressure at any desired rate.

Canned hydrogen is ideal for laboratory operations which require hydrogen. Civilian users will find Metal Hydrides canned hydrogen a convenient form of supply that can be kept on the stockroom shelves.

For production of hydrogen on a large scale, Metal Hydrides Incorporated supplies calcium hydride in bulk for use in acetylene generators. In such a case, instead of calcium carbide, crushed calcium hydride is fed to produce hydrogen.

German Tackifier NP 212

Production of a new compound which imparts to synthetic rubber a tackiness which aids its fabrication into finished products has been announced by George W. Burpee, president of the General Aniline and Film Corporation, New York. Known as koresin, this new compound also has possibilities in the manufacture of varnishes and lacquers. He said that present production is on a pilot plant scale, but that plans are being completed now to meet the full commercial demand.

Mr. Burpee also disclosed that koresin was first made in this country last spring after our armies had penetrated into Germany and had discovered that the Nazis were using a tackifier which appeared to have far superior qualities in fabricating synthetic rubber. The Rubber Reserve Corporation obtained a brief description of the manufacturing process and of the properties of koresin and turned over this information to the central research laboratory of the General Aniline and Film Corporation.

Chemically, koresin is a tertiary butyl phenolacetylene condensation product.

New Fungicide NP 213

A new fungicide for use against numerous diseases that attack growing plants, either separately or in combination with various standard insecticides such as DDT to control both diseases and insects, has been announced by the DuPont Company.

This new chemical is an organic sulfur derivative, "Zerlate" fungicide, based on zinc dimethyldithiocarbamate. Both this new product and "Fermate" fungicide, based on ferric dimethyldithiocarbamate, show unusual promise for use as sprays and dusts.

They are superior to copper and sulfur fungicides for the control of many important plant diseases and are effective against some diseases, such as tomato anthracnose, for which there has been no satisfactory control, according to officials of Du Pont's Grasselli Chemicals Department.

Small Petroleum Cracking Unit NP 214

The petroleum refining industry of Mexico as well as the United States and the world, may well be revolutionized through the invention and development by the Universal Oil Products Company of a small, compact catalytic oil cracking unit of radically new design.

Dr. Gustav Egloff of Universal announced the new development on October 3, at a luncheon meeting of the Mexican-American Conference on Industrial Re-

CHEMICAL INDUSTRIES TECHNICAL DATA SERVICE

CHEMICAL INDUSTRIES, 522 Fifth Ave., New York 18, N. Y. (12-5)

Please send me more information, if available, on the following items. I understand that nothing further may be available on some of them.

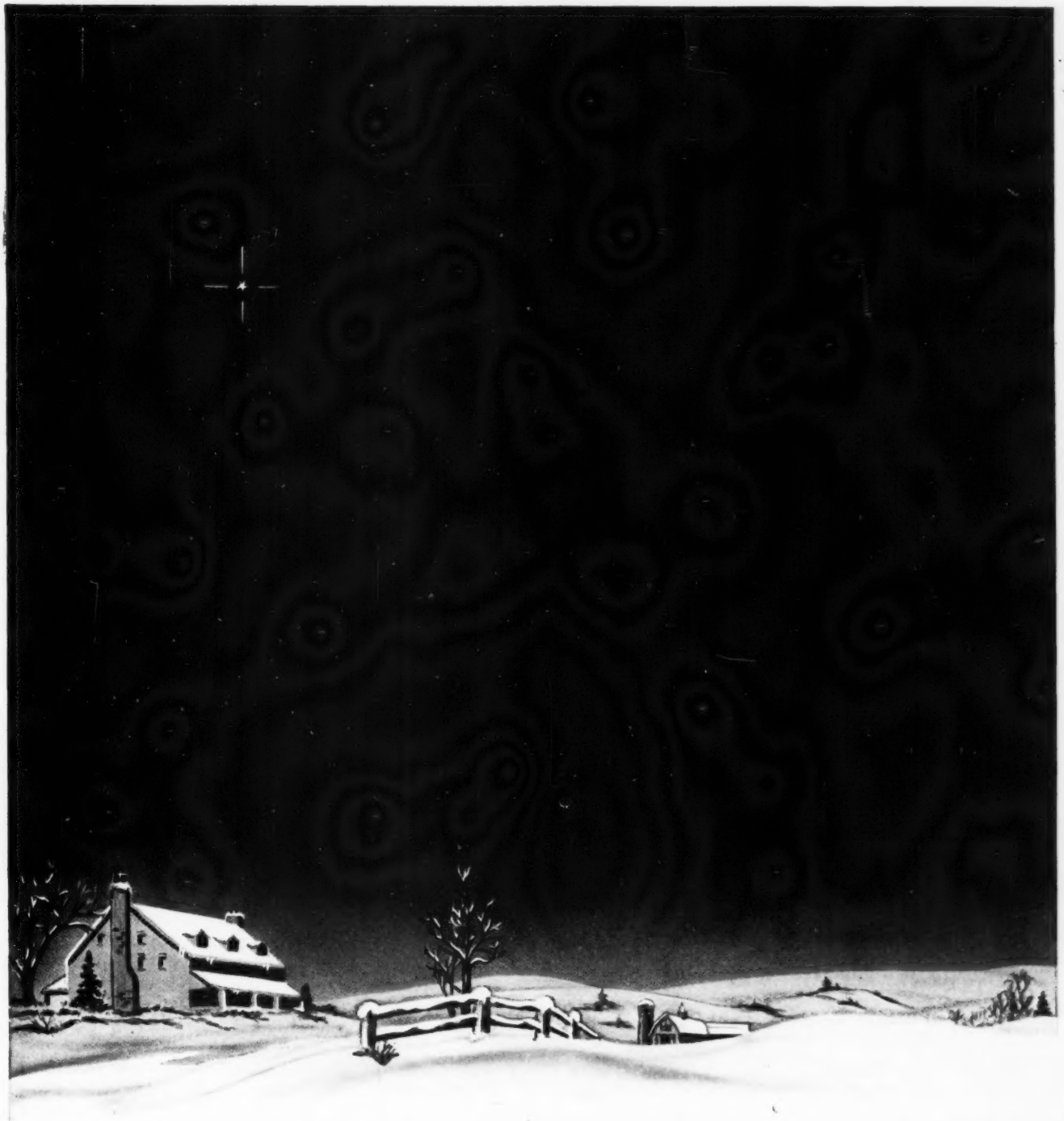
NP 210	NP 213	NP 216	NP 219	NP 222	NP 225
NP 211	NP 214	NP 217	NP 220	NP 223	NP 226
NP 212	NP 215	NP 218	NP 221	NP 224	NP 227

Name ..... Position .....

Company .....

Street .....

City & State .....



We of Heyden extend to our friends everywhere, hearty greetings and cordial good wishes for a Happy Yuletide and a Prosperous New Year.

Heyden Chemical Corporation, New York, N. Y.

New Products and Processes Index
Volume LVII, July-December, 1945

Acetonylacetone ... 98
Adhesive ... 660
  Emulsion ... 105
  Resorcinol resin ... 1090
Alkali-free glass ... 872
Alloy cutting ... 660
Allylic halides ... 98
Aluminum anodizing ... 476
  isopropylate ... 1092
  treating process ... 872
Amines ... 658
Anti-fog preparation ... 478

Borates, Nylon improved by ... 476
Boron increases steel hardness ... 662
Brass cleaner ... 476
Bristles, Brush, Casein ... 282

Carbon remover ... 288
Carbonates, Organic ... 98
Casein brush bristles ... 282
Cellulose from the common reed ... 870
  propionate plastic ... 870
China wood oil substitute ... 282
Chloramine-B ... 104
Chlorine comparators ... 282
  trifluoride ... 1084
Cleaning and descaling compound ... 288
Cleanser, Fluorescent ... 100
Coal, Coking ... 104
  Surface moisture of ... 286
Coating, Roller ... 1086
  composition, Vinyl butyral ... 1088
Color glue for plastics ... 106
Coking coal ... 104
Concrete improver ... 478
Copper dimethylglyoxime rotproofs wool 872
Cracking unit, Petroleum ... 1082
Cyanamide process ... 877
Cyclotrimethylenetrinitramine ... 282

DDT finishes ... 664
Dermatitis preventive ... 480
Difluoroethyl acetate ... 874
Detonator ... 282

Electrolytic hydrogen and oxygen ... 480
  tin plating ... 100
Enamels, Synthetic ... 664
Estrogens, Synthetic ... 102
Ethyl trifluoroacetate ... 874

Fabric, Fire-resistant ... 286
Fiberglas milled fibers ... 1088
Finishes, DDT ... 664
  Wrinkle ... 914
Fluorescent cleanser ... **100**
Foamglas insulation ... 662
Fungicides ... 872, 1082
Fuel from wastes ... 284

Glass, Alkali-free ... 872
Glue, Color, for plastics ... 106
  Resorcinol resin ... 1086
  Urea resin ... 662
Goggle cleaner ... 286
GR-S, Processing aid for ... 876
Graphitic mica in paint pigments ... 872

Halides, Allylic ... 98
High-frequency heat saves Vitamin C ... 476
Hormone tablets ... 476
Hydrogen ... 1082
  Electrolytic oxygen and ... 480

Insecticide concentrate ... 662
Insulation, Resin ... 102
  Foamglas ... 662
  Liquid ... 98
Isopropanolamine, Mixed ... 1088

Koresin ... 1082

Laminating resin ... 662
dl-Leucine ... 874
Light absorbent ... 476
Liquid insulation ... 98
Limerock DDT diluent ... 870
Lubricant, Silicone ... 476
  Synthetic ... 474

Magnesium bisulfite for pulp process 100
Margaric acid ... 282
Menthylphenol ... 282
Metal descaling with sodium hydride ... 1082
Mildewproofing agent ... 105
Milkweed resin ... 282
Mold impregnant resin ... 1088
Moldings, Impression, Plastic for ... 1092
  Silastic ... 660
Mould storage ... 284
Moss extracts ... 870

Nitriles ... 658
Nylon improved by borates ... 476

Olefin amination ... 658
Organic carbonates ... 98
Oxygen, Electrolytic hydrogen and ... 480

Paint, Tire ... 660
  pigment, Graphitic mica in ... 872
Petroleum cracking unit ... 1082
pH test papers ... 874
Phthalic vehicle ... 476
Pine needles, Textile fiber from ... 1086
Plastic ... 658
  Cellulose propionate ... 870
  filler ... 286
  Flame-resistant ... 1092
  from sugar ... 284
  Sealing, Thermoplastic ... 1090
Plasticizer ... 658
  Resin ... 474
Polystyrene ... 474
Protective creams ... 284
Pulp process, Magnesium bisulfite for 100

Quinine extraction ... 480

Reed, Cellulose from the common ... 870
Resin adhesive, Resorcinol ... 1090
  glue, Resorcinol ... 1086
  Insulating ... 102
  Laminating ... 662
  Milkweed ... 282
  plasticizer ... 474
Resorcinol resin adhesive ... 1090
  glue ... 1086
Roller coating ... 1086
Rosin soap rubber ... 98
Rubber finishes ... 662
  Rosin soap ... 98
  Silicone ... 474

Sawdust, Wallboard from ... 660
Sealing plastic, Thermoplastic ... 1090
Silastic moldings ... 660
Silicone lubricant ... 476
  rubber ... 474
  varnish ... 872
Soap removes lacquer, paint ... 662
Sodium fluoroacetate ... 1084
  hydride for descaling metals ... 1082
  trifluoroacetate ... 874
Softening agent ... 284
Steel, Boron increase hardness of ... 662
Sugar, Plastics from ... 284
Sulfa drug ... 660
Supersonics ... 284
Surface moisture of coal ... 286

Tackifier, German ... 1082
Tannin ... 98
Tetrachlorophthalic anhydride ... 106
Textile fiber from pine needles ... 1086
Thioglycollates ... 284
Tin, Electrolytic plating of ... 100
Tire paint ... 660
Trifluoroacetic acid ... 874

Upholstery fabric, Fire-resistant ... 286
Urea resin glue ... 662

Varnish, Silicone ... 872
Vinyl butyral coating composition ... 1088
Vitamin C, High-frequency heat saves 476
  D_2 ... 105

Wallboard from sawdust ... 660
Wastes, Fuel from ... 284
Waterproofing compound ... 877
Weed killer ... 100, 877
Wood treatment ... 876
Wool, Copper dimethylglyoxime rotproofs ... 872
Wrinkle finish ... 914

Zinc dimethyldithiocarbamate ... 1082

search, which was sponsored by the Illinois Institute of Technology.

The new type unit, Dr. Egloff said, can be installed at low cost to fit small-scale refining operations, thus for the first time making the latest procedures and techniques of catalytic cracking practical for the small refiner. By this means he can produce superior aviation and motor gasoline, enjoying the same advantages, suited to his refining capacity, which the major companies long have enjoyed in large-scale catalytic cracking.

Sodium Fluoroacetate New Rat Poison NP 215

It has been revealed by the Department of the Interior that its Fish and Wild Life Service, Bowie, Md., discovered the efficacy of sodium fluoroacetate as a rat poison, sorely needed to replace scarce strychnine and red squill during the war. The chemical is exceedingly toxic to man.

The material is still in the development stage, but Ira N. Gabrielson, director of the Service, predicts that the material, called "1080," will be available for civilian use under restrictions or regulations that will guarantee its rational and safe use.

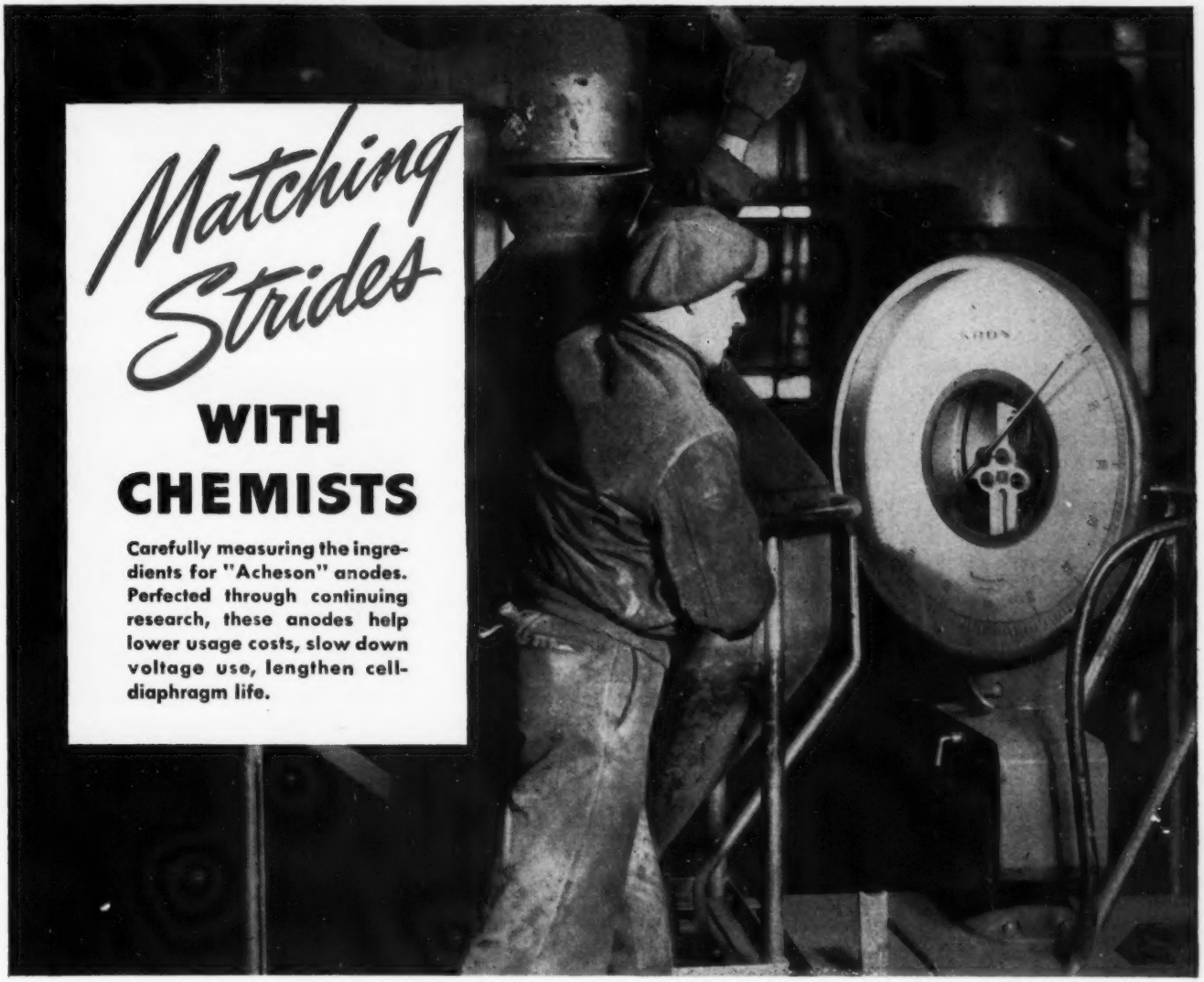
Chlorine Trifluoride NP 216

Conversations of an American technical team with members of the I. G. Farbenindustrie staff have brought out the information that chlorine trifluoride, first described in 1930, was produced on a pilot-plant scale in Germany during the war.

The material, a stable liquid boiling at 12° C, was first prepared in experimental quantities in the course of an investigation of fluorinating agents. It was unsatisfactory for that purpose, but German Army officers expressed interest in its incendiary properties. It is believed that the German Army intended to use ClF_3 in shells against aircraft and tanks. The unique properties of the substance would be peculiarly suited against such machines, since organic matter would be immediately ignited, and glass or plastic windows would be permanently etched and rendered opaque. Glass wool is said to burn with a flame in the presence of ClF_3, and the reaction with water is so vigorous as to give off incandescent gases.

The compound is made by heating proper proportions of the gaseous elements to 280° C in a U-shaped tube. The vapors are condensed at —80° C and run into iron cylinders which are vented several times to allow fluorine, chlorine, and chlorine monofluoride to escape. The fluorine is produced by electrolysis of potassium acid fluoride in a magnesium cell with carbon anodes. The metallic magnesium vessel serves as the cathode. The cell is operated at 100° C, being charged continuously with anhydrous HF. The evolved H_2 and F_2 are cooled in a

No. 12 of a Series: "Looking at the FIVE ESSENTIAL THINGS you never see in ANODES!"



Under the stimulus of war, the chemical industry has progressed in developing new products and new highs in efficiency. The industry is thus better equipped to meet the challenge of days to come.

Matching strides with the chemists, National Carbon Company, Inc. . . . through continuing research . . . also successfully rose to meet this war crisis. Carbon and graphite anodes performed as never before.

And now in the days to come, continuing research—one of the "five essential things you never see" in anode-manufacture*—will continue to help us to parallel the progress of chemistry by turning out more uniform, longer-lasting anodes.

. . . .

*These "five essential things you never see" in anodes are: Selection of raw materials, manufacturing experience, manufacturing control, continuing research, and customer service. They are a part of every "Acheson" anode. We shall be glad to explain in detail how they can be of distinct advantage to you.

ACHESON GRAPHITE

The word "Acheson" and the "Acheson" Seal are registered trade-marks of National Carbon Company, Inc.

NATIONAL CARBON COMPANY, INC.
Unit of Union Carbide and Carbon Corporation
UCC
GENERAL OFFICES: 30 East 42nd Street, New York 17, N.Y.
DIVISION SALES OFFICES: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco
In Canada: Canadian National Carbon Company Limited, Toronto 4, Canada

coil immersed in dry ice, to remove HF, and mixed with chlorine, as mentioned above. A blue flame is said to result at the point of mixture.

Several tons of the material were made in a small pilot plant built by the Army at Kummersdorf, about 30 miles south of Berlin.

The information gathered by the American group has been published as Report No. 166, Office of the Publication Board, Department of Commerce. The Board notes that some of the products and processes described may be the subject of U. S. patents, and a patent study should accordingly be made before pursuing any practical applications of the data contained in its reports.

Resin Glue NP 217

A new resorcinol resin glue of utmost durability has just been released to the trade by the Casein Company of America, Division of the Borden Company.

Marketed under the trade name of Cascophen, the new adhesive was invented in 1943 but used mostly for war purposes. As a result of reconversion to peacetime manufacturing and greater supplies of raw materials, it is now possible to make the material available to the civilian trade.

The product is a dark, wine-colored liquid adhesive, and is supplied with a separate powdered catalyst. It has many of the properties of a molding resin. Possessing high strength, even in a thick film, Cascophen is adaptable for use on sawed surfaces or on joints which may not be perfectly fitted. It requires only sufficient pressure to ensure good penetration into the surface.

Outstanding feature of the new product is its unique ability to develop a boil-proof, completely durable phenol resin type bond at ordinary room temperatures. This makes available the quality of hot press cured resin for joint assembly, gluing thick laminations, and every day shop work.

Although developed primarily for gluing wood, the product has been found effective in bonding practically any material with some degree of porosity. Such materials include cloth, paper, cork, leather, linoleum, vulcanized fiber, crockery, glass fiber, asbestos boards and plastics.

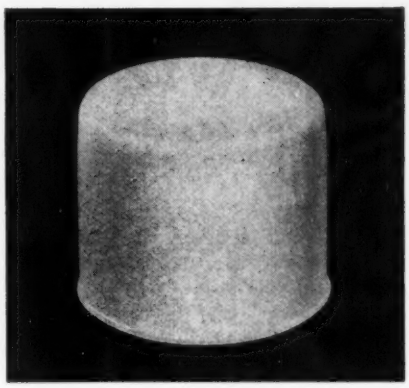
Roller Coating NP 218

A new method of roller coating, by means of which many metal, wood and plastic products can be finished before stamping, forming or other fabricating, has been developed by the Japan Company.

Combining a specially designed coating machine with carefully engineered infrared baking equipment, the new method produces roller coated sheets completely baked in three minutes or less, as compared with the 15- to 20-minute periods commonly regarded as normal for the process.

The finishing service, not the machinery, is supplied by the Japan Company. However, manufacturers can ship work to Cleveland for roller coating.

Various types of finishes are employed, including paint, enamel, lacquer, varnish and plastic coatings. The process was developed especially for the use of vinyl base materials, which produce extremely tough coatings. These plastic finishes stand up even under deep drawing of metal parts. All types of coating are applied with great uniformity of thickness, tolerances as close as .001" being held to customers' specifications. Uniform color shades, including the most delicate pastels, are maintained without difficulty.



The photo shows a deep drawn metal cup, roller coated with a vinyl plastic coating before forming.

SUPPLIERS SINCE 1838

COCOANUT OIL	FATTY ACIDS
Castor Oil	Red Oil
Corn Oil	Special White Oleine
Cottonseed Oil	Stearic Acid
Olive Oil and Foots	Rufat
Peanut Oil	Cocoanut F. A.
Rapeseed Oil	Corn F. A.
Sesame Oil	Cottonseed F. A.
Sunflowerseed Oil	Linseed F. A.
Lard Oil	Peanut F. A.
Neatsfoot Oil	Soya F. A.
Tallow and Grease	Tallow F. A.
Lanolin and Wool Fat	

White Mineral Oil - Petrolatum - Superfatting Agent

VODOL A maize phosphatide which lowers surface and interface tension of oils and fats, stabilizes and prevents reversion, increases penetration and spread.

Soda Ash	Trisodium Phosphate
Caustic Soda	Disodium Phosphate
Modified Soda	Monosodium Phosphate
Sodium Metasilicate	Tetrasodium Pyro Phosphate

THE LAMEPONS unique surface active agents; prolific foam; high detergency and emulsifying powers; suitable for cosmetic and industrial use.

QUADRAFOS a stable polyphosphate for water conditioning and mild but effective detergency.

Starch and Dextrine

WELCH, HOLME & CLARK CO., INC.

563 GREENWICH STREET, NEW YORK 14, N. Y.

Textile Fiber from Pine Needles NP 219

From *Bois et Resineux*, Bordeaux, France, comes a report on the development in that country of a versatile fiber, "Pin-tex," made by treatment of pine needles:

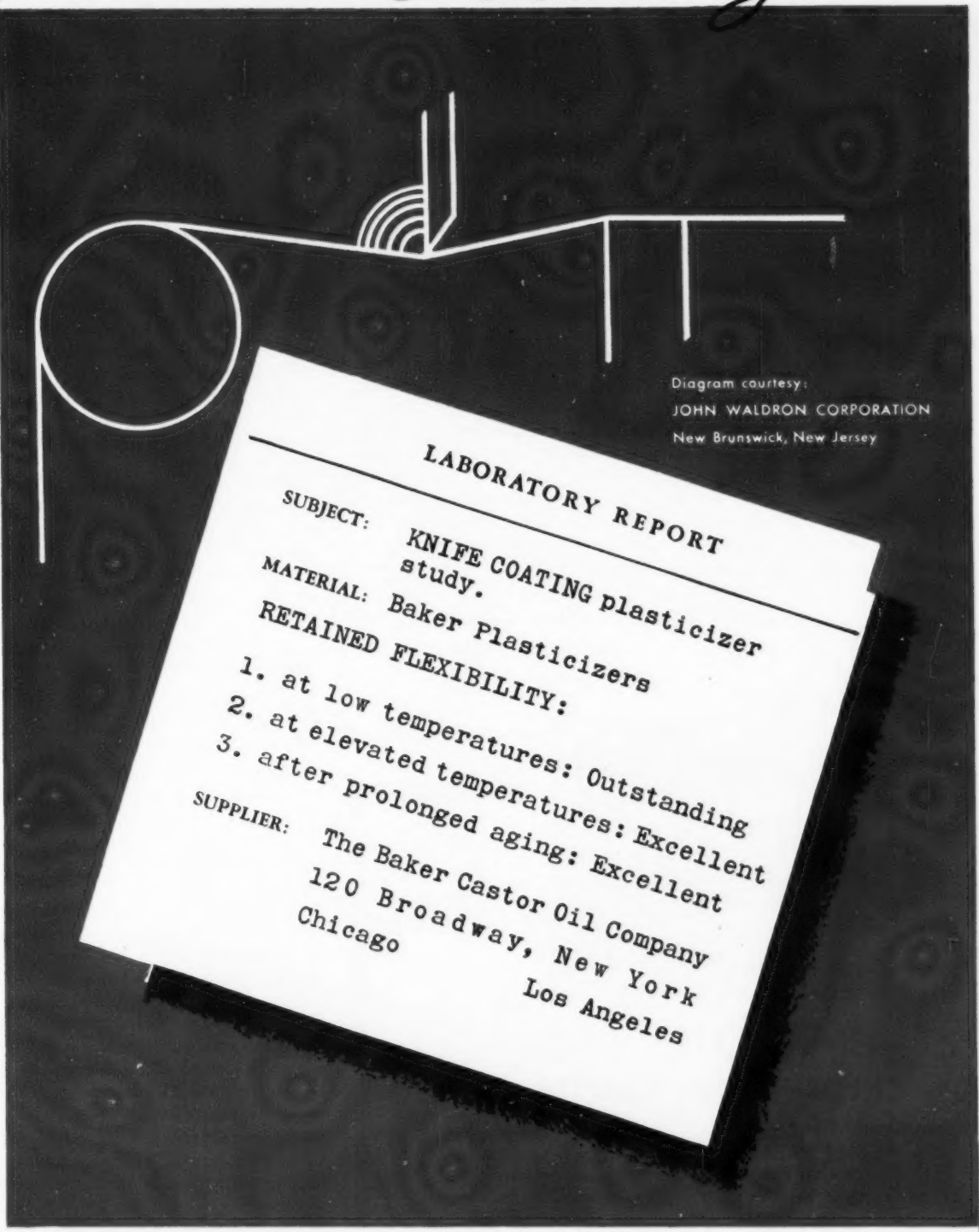
"While doing research work with a view to the manufacture of products with a base of asbestos, of light weight material, soundproof, heat insulating, almost fireproof, resistant to alkalies and acids, capable of being spun or even woven either alone or mixed with other textile materials, engineers have treated pine needles on the sea coast of the Department of Charente.

"After treatment in various baths, carding, crushing, combing, and shredding, these needles finally give the 'Pin-tex' in more or less fine fibres.

"The yield in weight is 60 per cent. Out of one million hectares planted with maritime pine in the southwest of France, 400,000 can be used at the rate of five tons of needles per hectare corresponding to the yearly fall of needles during a period of ten years. If we assume a yield of 50 per cent we can expect to obtain 100,000 tons of 'Pin-tex' per year.

"Now 'Pin-tex' can be used for the manufacture of partitions insuring soundproofing or heat repelling, heat or electric insulation, fibres assuring protection

BAKER *Plasticizers*



BAKER *Plasticizers*

against fire—after ignition—oakum for gaskets and for pipe connections, cement fibre, plates for covering (roofing) houses of the Everite type, etc.

"Mixed with other textile material, this fibre can be used for the manufacture of yarn or fibres—pine wool. Pure and twisted it gives a resistant twine which can be woven for bag manufacture."

Mixed Isopropanolamine NP 220

Mixed isopropanolamine is now available from Carbide and Carbon Chemicals Corporation. Manufacturers of emulsified finished products, particularly those where the color of the finished product is important, will be interested in this chemical. Laboratory tests have definitely proved that under normal storage conditions, mixed isopropanolamine soaps are more resistant to darkening than are ethanolamine soaps. Because mixed isopropanolamine soaps are completely oil-soluble, they are desirable, also, in "soluble" textile and metal cutting oils as well as dry-cleaning soaps. This amine product, which is a viscous, hygroscopic liquid with a slightly ammoniacal odor, is completely soluble in water, but only slightly soluble in hydrocarbons. The combining weight of mixed isopropanolamine, is 135 to 145, or approximately the same as that of triethanolamine, and for this reason it may be substituted weight for weight in most formulas calling for triethanolamine.

Mold Impregnant NP 221

Furane Plastics and Chemicals Company has announced commercial production of a new plaster of Paris impregnant for treating plaster of Paris and Hydrocal forms. Type Resin XP is recommended for plaster, while type Resin XR is recommended for Hydrocal.

Plaster of Paris forms, patterns, dies, contour blocks, etc., are prepared and poured exactly in their usual manner. After the parts have been fully shaped and thoroughly dried, the liquid resin impregnant is applied by dipping, brushing or spraying and then the parts are cured in an oven.

A very hard, bone-like structure is developed with physical properties comparable to cast plastics. Toughness may be acquired through prior inclusion of large fiber fillers. Dimensions are held accurately since there is no shrinkage whatsoever either during cure or in service. Temperature resistance of the impregnated forms is considerably higher than straight plaster of Paris or Hydrocal. Water and chemical resistance are increased substantially.

Resinified plaster of Paris and Hydrocal are giving efficient service in match plates, core boxes, dies for hydropress work, stretch press dies, statuary, figurines and the like.

Vinyl Butyral Coating Composition NP 222

A newly developed cloth-coating compound of vinyl butyral that retains flexibility at below 0° F. has been announced by the Plastics Division of Monsanto Chemical Company. The new compound is the first to go into commercial use on Army ponchos to meet low temperature specifications and was developed at the request of the Army Quartermaster Corps.

Until the development of the new Monsanto material, use of vinyl resins for Army ponchos and other waterproof apparel had been handicapped by the fact that they became stiff at low temperatures in comparison to rubber, which has mitigated against their use for Army apparel to be issued and worn in cold climates. Although rubber retains its flexibility at low temperatures, the vinyl resins have important other advantages and the Army initiated an urgent request to develop a material that would overcome this handicap.

The result is Monsanto vinyl butyral compound DB218 which has been tested under rigid Quartermaster Corps specifications and found to combine the advantages of vinyl materials with full flexibility, comparable to rubber at 0° F. and colder. The material has now been approved for use by coaters in making Army ponchos and similar gear.

Fiberglas Milled Fibers NP 223

Research now being conducted in the laboratories of Owens-Corning Fiberglas Corporation and in the laboratories of other manufacturers points to numerous uses of a new material, Fiberglas milled fibers, as a reinforcing agent for special papers, plastics and abrasive compounds. The milled fibers have also been employed successfully to improve the sound deadening characteristics of paints.

Fiberglas milled fibers are formed by hammermilling Fiberglas continuous yarns into maximum lengths ranging from one thirty-second of an inch to one and one-half inches. Diameter of the fibers, in all lengths, is 0.00025 of an inch. Appearance of the fibers varies with the maximum fiber length. The shortest lengths are tightly nodulated, while the longest sizes form a loose mass.

The tear strength of explosive paper, used for wrapping dynamite, is materially increased by the addition of 10 per cent, by weight, of three-quarter-inch milled fibers.

Ten per cent, by weight, of the milled fibers dispersed in filtering paper gives it more uniform capillarity and speeds the filtering process. Because of high adsorption characteristics, the same per-

Try These

AMECCO CHEMICALS

Now!

PAROIL 170

70% CHLORINATED PARAFFIN RESIN

Recommended for —

FIRE RETARDANT PAINTS
TEXTILE FINISHES
PRINTING INKS
ADHESIVES
INDUSTRIAL FINISHES

Send for a sample and further information.

AMECCO CHEMICALS INC.

NEW YORK SALES OFFICE • MAIN OFFICE AND PLANT
60 EAST 42nd STREET, NEW YORK 17, N.Y. 75 ROCKWOOD STREET, ROCHESTER 10, N.Y.
ESTABLISHED 1919

for prompt shipment

Refined **Pyridine**

Refined **Quinoline**

Koppers now has appreciable supplies of these tar bases on hand. These supplies, together with our large production capacity, enable us to supply these products to you promptly, for use in the manufacture of vitamins, medicinals, drugs, waterproofing materials, etc.

Also available for prompt shipment are—

REFINED ALPHA PICOLINE
DENATURING GRADE PYRIDINE
REFINED MIXED PICOLINES
REFINED 2,4 LUTIDINE
ISOQUINOLINE
HIGH BOILING TAR BASES

Mail or wire your order. Shipment can be made at once.

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

KOPPERS COMPANY, INC., • Tar and Chemical Division • Pittsburgh 19, Pa.

NOW!

LITHIUM HYDRIDE
•
CALCIUM HYDRIDE
•
LITHIUM-CALCIUM HYDRIDE

AVAILABLE!

Large Commercial Quantities
•
High Commercial Purity
•
Many Particle Size Ranges

Other LITHALOYS Products

Lithium Metal
Lithium Alloys
Lithium Peroxide
Lithium Nitride
Lithium Amide
Lithium Alcoholates
Lithium Alkyls
Lithium Aryls

LITHALOYS CORPORATION
444 MADISON AVENUE, NEW YORK 22, N. Y.

centage of the fibers in laminating paper speeds impregnation by the resin and reduces curing time.

Fiberglas milled fibers have been successfully incorporated in high-pressure resins (melamine) to form molded plastic switch boxes.

A 300 to 400 per cent improvement in impact strength and generally longer life have been given phonograph records by replacing organic filler material with 3 per cent, by weight, of the one-eighth-inch Fiberglas milled fibers.

Fiberglas milled fibers ranging from one-sixteenth to one-thirty-second of an inch in length have been incorporated in sound deadening paints, with a resulting improvement of 100 per cent in sound deadening qualities.

Resin Adhesive NP 224

The availability of another room-temperature setting, durable, resin adhesive has been announced by Pennsylvania Coal Products Company. The new product, identified as Penacolite G-1215, is the most recent development in resorcin-based adhesives.

The new member of the Penacolite family, G-1215, shows outstanding strength and durability properties cured at room temperature, and when elevated temperatures are employed, considerably accelerated cures are obtained. For example, at 180° F. glue line temperature, cures may be obtained in two minutes.

In addition to being an excellent adhesive for wood, Penacolite G-1215 produces durable high strength bonds with phenolic laminates and moldings, many other plastics, fabrics, leather and rubber.

The price on the new adhesive is stated to be substantially lower than the pioneer room temperature durable adhesives developed earlier. Samples and descriptive literature are available upon request.

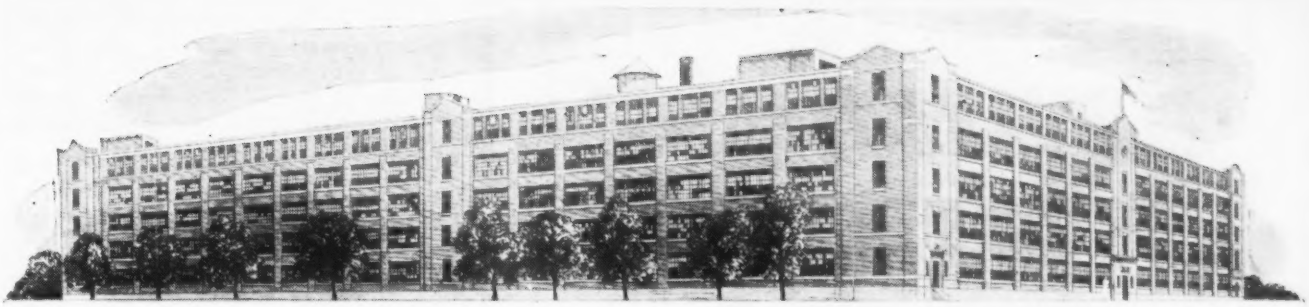
Sealing Plastic NP 225

"Cliderite" is a thermoplastic sealing compound which was produced by the Ernst Bischoff Company of New York with the assistance of Johns Hopkins University at Silver Spring, Maryland.

This material, based on an ethyl cellulose flake, was used in vital war production to seal condensers and rectifiers from moisture and the outside of the battery unit from acid leakage.

It was also used as a cushion material that remained tough and durable at temperatures above 200° F and below 0° F. This material has many desirable characteristics, such as its ability to adhere to metal, glass, and other plastics. At the close of the war, Cliderite was being investigated for interior linings as protection against alkalis and highly concentrated acids.

The characteristics of the new plastic completely fitted it for stringent require-



NO. 3 OF A SERIES OF DIGEST REPORTS FROM CYANAMID RESEARCH LABORATORIES

AN OPPORTUNITY FOR SYNTHESIS THROUGH USE OF TIMELY CHEMICAL DEVELOPMENTS

AERO† GUANIDINE COMPOUNDS

$R_1NH\text{-}C(=NH)\text{-}NHR_2$

From the guanidine compounds, one can obtain reagents which range from strong organic bases to neutral or acid reacting salts.

For example, free guanidine ($H_2NC(=NH)NH_2$), which is readily prepared from guanidine carbonate, exhibits alkalinity nearly as strong as sodium hydroxide. The substitution of aliphatic, alicyclic, heterocyclic, or aromatic radicals produces compounds having a wide range of basicity.

Guanidine compounds are highly reactive. For example, the reaction with acid chlorides is useful in the preparation of sulfaguanidine. Diketones react to produce substituted pyrimidines. Aldehydes react to form resin and plastic products.

Described below are seven guanidine compounds selected from several hundred possible derivatives. All can be produced in commercial quantities if sufficient tonnages are required.

Samples and more detailed information about the guanidine products in the list below are available for research and products development.

	Formula	M.P.	Purity	Solubility	Current Uses
AERO GUANIDINE SALTS					
Guanidine Carbonate*	$(H_2N\text{-}C(=NH)\text{-}NH_2)_2H_2CO_3$	197-9° C. decomp.	96%	v. sol. water v. sl. s. EtOH	Organic alkali; starting point for other guanidine salts.
Guanidine Nitrate*	$H_2N\text{-}C(=NH)\text{-}NH_2.HNO_3$	206-12°C	95%	sol. water sl. s. EtOH	Intermediate in the production of explosives and amino-guanidine.
Guanidine Hydrochloride*	$H_2N\text{-}C(=NH)\text{-}NH_2.HCl$	ca.183°C	95%	extremely sol. water	An unusually water soluble source of guanidine.
AERO MONO-SUBSTITUTED GUANIDINE SALTS					
Phenyl Guanidine Carbonate	$(C_6H_5NH\text{-}C(=NH)\text{-}NH_2)_2H_2CO_3$	135-7° C. decomp.	92%	v. sl. sol. water EtOH; insol. C_6H_6	Starting point for phenyl guanidine salts, intermediate in prep. of phenyl sub. pyrimidines.
Phenyl Guanidine Stearate	$C_6H_5NH\text{-}C(=NH)\text{-}NH_2.HOOCC_{17}H_{35}$	softens at 60° C.	ca. 95%	sl. dispersible in water; v sol. EtOH; insol. C_6H_6	Detergent; wetting agent.
AERO DI-SUBSTITUTED GUANIDINES					
Diphenyl Guanidine*	$C_6H_5NH\text{-}C(=NH)\text{-}NHC_6H_5$	146° C.	98%	v.sl. sol. water; sol. dil. acid; v.sol. EtOH; sol. hot C_6H_6	Rubber accelerator; a free guanidine base.
Diorthotolyl Guanidine*	$(o\text{-}CH_3C_6H_4)NH\text{-}C(=NH)\text{-}NH(C_6H_4\text{-}o\text{-}CH_3)$	178-9° C.	98%	v sl. sol. water; sol. dil. acid; sol. hot EtOH	Rubber accelerator; a free guanidine base.

*Available in commercial quantities. †Reg. U. S. Pat. Off

American CYANAMID & Chemical Corporation

(A UNIT OF AMERICAN CYANAMID COMPANY)

HEADQUARTERS FOR NITROGEN CHEMICALS

30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

·AVAILABLE·
SYNTHETIC
WAXES

For the manufacture of glossy, self-polishing, tack-free and water-resistant emulsions.

NO
CARNAUBA WAX
REQUIRED

Finished emulsions satisfactory for specification bids, floor polishes, fruit coatings, emulsion, shoe polishes, etc.

Low cost replacement waxes also available for paste, liquid solvent, and cream polishes for floors, automobiles and shoes.

FOR SAMPLES AND TECHNICAL FORMULATION BOOKLETS, WRITE TO:

CORNELIUS
PRODUCTS COMPANY

432 Fourth Avenue, New York 16, N. Y.
Murray Hill 6-6791

Chicago Office:
14 East Jackson Blvd. Phone Wabash 5971

ments. It passed shock-tests at 24,000 times the force of gravity; it was impermeable to moisture and concentrated acids and alkalis; it formed an indestructible bond to many types of plastics and metals.

Flame-Resistant Plastic for Impression Molding NP 226

A new flame resistant Thalid impression molding resin has been announced by the Plastics Division of Monsanto Chemical Company. The material is the first commercially available impression molding resin that provides plastics-glass cloth laminates which are self-extinguishing and do not support combustion.

The utility of plastic materials has been greatly broadened by the advent of impression molding resins. These materials, which require little or no pressure for fabrication, are used in conjunction with paper, cotton or glass cloth or with other relatively inexpensive sheet materials. The combinations provide a high degree of structural strength and permits manufacture of parts almost unlimited in size.

Among uses of impression moldings are large aircraft components, boats, large toys, chairs, tables and cabinets, instrument and machine housings, shipping crates and boxes, one-unit wall panels, and bodies for trailers and trucks. In many of these uses the rate of burning is of critical importance, but previously available impression molding resins burned readily. The new Thalid material overcomes this important handicap and greatly extends the field of usefulness of impression moldings.

The new resin is designated as Thalid XR540. It is handled the same way as previous impression molding resins. The filler of cloth, paper or other sheets is saturated with liquid resin. Either before or after this operation it is draped on inexpensive molds or forms. The application of heat then transforms the combination into a hard, tough structure of extremely light weight and high strength. Only sufficient pressure is necessary during this operation to hold the material in place. The cost of elaborate molds and heavy presses is therefore obviated and the limitations on size previously applied to plastics are removed.

The Thalid class of impression molding resins is in commercial production at Monsanto's Springfield plant.

Aluminum Isopropylate NP 227

Aluminum isopropylate, C. P., the mild reducing agent for the preparation of unsaturated alcohols from unsaturated aldehydes and ketones, has been added in full production to the line of chemicals manufactured at the Paterson plant of Mann Fine Chemicals, Inc. The firm's New York office is at 136 Liberty Street.

ADVERTISEMENT—*This entire page is a paid advertisement.* *Prepared Monthly by U. S. Industrial Chemicals, Inc.*

U.S.I. CHEMICAL NEWS

December ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1945

New Low-Cost Alkyd Meets Current Need For Non-Quota Resin

S&W Aroplaz 1379 Is Versatile Resin Having High Phthalate Content

To answer the current urgent need for resins made from raw materials that are exempt from existing oil and rosin quotas, U.S.I. offers its new alkyd resin, Aroplaz 1379. A modified alkyd of medium-to-short oil length, "1379" is suitable for use in a variety of air-drying and low-temperature baking finishes, such as those for metal cabinets, toys, hardware and implements. It can also be used satisfactorily in metal primers and low-cost finish coats, and as a general utility vehicle.

Finishes made with S&W Aroplaz 1379 air-dry hard overnight and bake hard in one hour at 200° F. To obtain the best drying rates, finishes should be aged from 48 to 72 hours.

High in Phthalate

Although S&W Aroplaz 1379 is a very low cost vehicle, it has a high phthalate content and performs remarkably well in all but top-

(*Continued on next page*)

SPECIFICATIONS

Solution:	49-51% Solids in Mineral Spirits
Viscosity (G.H.):	X-Z
Color (G.H. 1933):	10-12
Acid value (solvent free basis):	10-16
Wt./gallon @ 25°C.:	7.7-7.8 lbs.
Oil Content (solvent free basis):	No reportable oil
Phthalic Anhydride (solvent free basis):	33%

Solubility: Complete in all petroleum and coal-tar hydrocarbons. Insoluble in ethyl alcohol. Compatible with many alkyds, varnishes and drying oils of low and medium viscosity.

Color Printing Saved by Yellows That Now Outperform Chromes

Ink Makers Plan to Continue Use of Benzidine Yellows Because of Their Lower Cost and Improved Workability

Well up among the war-born "substitutes" that have won a permanent place in American chemistry are the benzidine yellows, which, ink manufacturers say, literally saved multi-color during the war. Synthesized from acetoacetanilide and other U.S.I. "arylides", these benzidine dyestuff pigments, have demonstrated cost and pressroom advantages which will assure continuance of their use despite the return of prewar chrome yellows.

High Tinctorial Strength

Chief reason for the superiority of the new synthetic colors, according to one of the country's largest ink manufacturers, is their extremely high tinctorial strength—ten, perhaps more, times that of chromes. This high strength more than offsets the per-pound price differential between the two types of dyestuff.



From 6 to 66 America has adopted Superman, Dick Tracy and other "comics" as part of the family. Thanks to the new benzidine yellows America could follow them—in color—throughout the war.

In addition, it means that the ratio of pigment to vehicle is tremendously reduced. This fact, coupled with the smaller crystal size of the benzidine pigment, makes for a marked improvement in the workability of the final ink. The tendency for the pigment to separate and "pile" on the printing plates is eliminated. The ink flows and handles more easily.

The new dyestuffs are non-bleeding in water, and in dilute acids and alkalies. They are also quite resistant to melted paraffin, alcohol and other common solvents, except chloroform.

Good for Majority of Inks

Only disadvantages of the new yellows are their lack of opacity and their tendency to fade on long exposure to strong light. According to the ink manufacturer, however, both of these disadvantages are unimportant in the vast majority of cases. Currently, opacity is being obtained by the addition of small amounts of white pigment or chrome. In the future, when printing papers return to their prewar whiteness, there is expected to be less and less demand for opacity in the yellow

(*Continued on next page*)

Redwood Seen as Source Of Oxidation Inhibitors

Products derived from redwood chips have been found to be effective inhibitors of autoxidation in paraffin hydrocarbons, according to a recently presented technical paper.

The most effective of the products tested was purified redwood tannin prepared by extracting redwood with warm water and then dissolving the active tannin fraction in ethyl acetate. The ether-soluble tar and the phenolic fraction obtained by destructive distillation of redwood phlobaphene were also found to be effective inhibitors.

The redwood tannins were said to compare favorably with benzyl-p-aminophenol and catechol in inhibiting action.

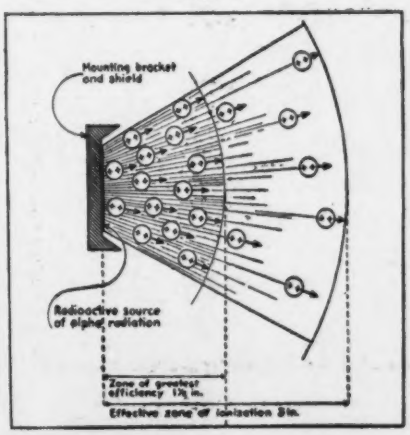
Rejuvenates Electrolyte By Addition of Acetone

Burrs, machine tool marks, roughness and other processing blemishes are sometimes removed from metal parts by a brightening electrolytic process employing a glycerine-hydrochloric acid electrolyte. Such electrolytes tend, after extended use, to become degenerated. A recent patent covers a method for rejuvenating such degenerated baths, by adding acetone in amounts up to 10 per cent of the volume of the bath.

New Radio-Active Device Eliminates Static Problems in Industrial Processes

A new radio-active device promises to afford an astonishingly simple way to end the fire hazards and production obstacles which static electricity presents in many manufacturing processes. This radio-active device uses alpha rays, given off by radium, to ionize the air near points where friction generates static. The ionized air, a conductor of static electricity, bleeds this unwanted static harmlessly off to ground.

The static eliminator consists of foil, impregnated with a radio-active material, which is attached by bonding to a non-radio-active, heavier metallic backing. This assembly is attached to the machine at the proper points. No other changes in the machinery are needed, and it is claimed that no unusual precautions need be taken to protect shop personnel, and service poses no problem.



ADVERTISEMENT—*This entire page is a paid advertisement.*

New Low-Cost Alkyd

(Continued from preceding page)

grade whites. It is rated "fair" in color, color retention and flexibility. The latter characteristic, however, can be improved where desired by adding 5 to 10 per cent of Q-body linseed oil (or other oils, vehicles or alkyds). Zinc oxide and similar reactive pigments should be avoided.

Samples are available upon request.

Drug Intermediate Made By New Claisen Reaction

A patent of recent issue describes an improved method of preparing 4-methyl phenyl acetone, an intermediate used in the preparation of therapeutic agents. Ethyl acetate and 4-methyl benzyl cyanide are reacted in the presence of sodium ethoxide to form alpha-(4-methyl phenyl)-acetoacetonitrile. Saponification of the cyano group yields 4-methyl phenyl acetone.

One use described for the intermediate is the preparation of alpha-(4-methyl phenyl)-beta methylamino-propane, a sympathomimetic producing effects similar to those of benzedrine.

Mixed Solvents Boost Soya-Bean Oil Yield

A writer in a British chemical magazine outlines a method for increasing the extraction of soya-bean oil. While 95 per cent ethanol will extract only 12 per cent, the addition of 10 per cent trichlorethylene boosts the yield to 50 per cent.

The less-inflammable, mixed solvent is completely miscible with all concentrations of soya-bean oil when heated. After it cools, the solution extract separates into a top layer of practically pure ethanol and trichlorethylene, which may be reused as it is, and a lower layer containing 50 per cent soya-bean oil.

"Arylide" Dyes

(Continued from preceding page)

ink. Traditionally, the yellow ink has had to be opaque because it is the first color printed; but if the paper itself is of good whiteness, there is no more reason for the yellow to be opaque than for the red and blue which are transparent.

As to light-fastness, it is the ink makers experience that benzidine yellows are good for "999 out of 1000" applications. Packages which must have long shelf life and billboards which must withstand exposure to direct sunlight are two typical exceptions.

Hansa Yellows

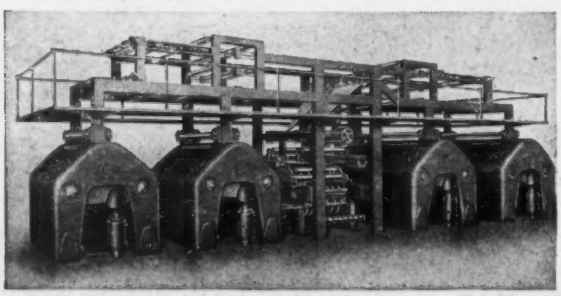
Predecessors of the benzidine yellows, the Hansa yellows have considerably higher fastness to light and are used for jobs to which the newer dyes are unsuited. While somewhat lower in tinctorial strength, the Hansas have the same advantages as the benzidines in making inks which have better flow and work better on the press. Their high resistance to the action of sunlight and alkalies also makes them desirable for use in pigmenting papers and protective coatings.

Synthesis and Tinting

Benzidine yellows are made by combining tetrazobenzidine with one of the acetoacetarylides. Similarly, Hansa yellows are made by coupling "arylides" with diazotized aniline derivatives.

By varying the intermediates used, a great number of yellows can be produced having different shades and fastness to various agents. However, current practice is to make just a few benzidine yellows and then tint them with reds or oranges to produce the desired shade.

U.S.I. has developed some 14 different arylides of widely varying properties. Specifications on these intermediates may be obtained by writing to U. S. Industrial Chemicals, Inc.



The swing is to color! This up-to-the-minute press is especially designed to permit addition of color in newspaper printing, when desired. Chances are, the inks run on it will contain some U.S.I. products — resins, solvents, or dyes made from U.S.I. intermediates.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

Removing rust without sandblasting is the purpose of a new solution said to work by disintegrating the rust, and at the same time fortifying the metal against further corrosion. **(No. 007)**

USI

To recover paint and lacquer from spraybooths, and reclaim it for re-use, a new process is described as being highly economical and to require neither special skill nor special equipment. **(No. 008)**

USI

To handle dangerous acids safely, a new durable corrosive-resistant pump has been designed to remove acids from carboys without the use of air pressure. The plastic pump is reported to fit carboys of from 5 to 13 gallons capacity. **(No. 009)**

USI

A stamping ink for slick surfaces, developed especially for marking plastics, may also be used on almost any highly-polished surface, according to claims of its manufacturer. It is further stated that the ink is heat-proof and weatherproof. **(No. 010)**

USI

To clean leather, a new detergent is offered which is described as being both a cleaner and a toner. It is said to contain no chemicals harmful to leather. **(No. 011)**

USI

Joining thermoplastics to each other, as well as to paper, and other surfaces, is the advertised function of a new adhesive. **(No. 012)**

USI

Synthetic, fungus-resistant cord is offered for electrical assemblies, lacing and other applications where it is subject to attack by fungus, water, oils or flame. **(No. 013)**

USI

A plastic film, intended for use in pocketbooks and similar articles, is announced as being washable, flexible, tough, and resistant to most chemicals and to fire. A wide choice of colors is offered. **(No. 014)**

USI

To test plastics, a deflectometer is designed to record the amount of bend automatically on a stress-strain recorder, and to be usable on plastics of greatly varying rigidity, as it permits the operator to magnify recorded deflection by 5, 10, 20, 50, 100 or 200. **(No. 015)**

USI

To clean cement, a new detergent is formulated to penetrate the pores, emulsify grease and oils, and, under continued use, to bleach the cement surface. **(No. 016)**

USI

Synthetic orange pigment, said to have outstanding qualities of light and chemical resistance, is offered in limited quantities for research. Its suitability for paper-making applications is stressed. **(No. 017)**

USI

U.S.I INDUSTRIAL CHEMICALS, INC.

60 EAST 42ND ST., NEW YORK 17, N. Y. U.S.I. BRANCHES IN ALL PRINCIPAL CITIES

ALCOHOLS
Amyl Alcohol
Butanol (Normal Butyl Alcohol)
Fusel Oil—Refined
Ethanol (Ethyl Alcohol)
Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof, C.P. 96%, Absolute
*Super Pyro Anti-freeze
*Solox Proprietary Solvent
***ANSOLS**
Ansol M
Ansol PR

ACETIC ESTERS
Amyl Acetate
Butyl Acetate
Ethyl Acetate
OXALIC ESTERS
Dibutyl Oxalate
Diethyl Oxalate
PHTHALIC ESTERS
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate
OTHER ESTERS
*Diatol
Diethyl Carbonate
Ethyl Chloroformate
Ethyl Formate

INTERMEDIATES
Acetoacetanilide
Acetoacet-ortho-anisidide
Acetoacet-ortho-chloranilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloranilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate
ETHERS
Ethyl Ether
Ethyl Ether Absolute—A.C.S.
FEED CONCENTRATES
*Curbay B-G
*Curbay Special Liquid
*Vacatone 40

ACETONE
Chemically Pure
RESINS
S&W Ester Gums—all types
S&W Congo Gums—raw, fused & esterified
S&W *Aroplaz—alkyds and allied materials
S&W *Arolene—pure phenolics
S&W *Arochem—modified types
S&W Natural Resins—all standard grades
OTHER PRODUCTS
Collodions
Ethylene Glycol
Nitrocellulose Solutions
Ethylene
*Indalone
Urethan

*Registered Trade Mark

Chemicals for Industry



BROMIDES

(Crystals—Granular)

SODIUM POTASSIUM

AMMONIUM



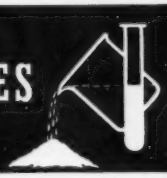
JOSEPH TURNER & CO.

83 EXCHANGE PLACE
PROVIDENCE, R. I.

RIDGEFIELD, NEW JERSEY

435 N. MICHIGAN AVE.
CHICAGO 11, ILL.

METALLIC STEARATES



ZINC STEARATE

CALCIUM STEARATE

ALUMINUM STEARATE

MAGNESIUM STEARATE

Many Other Metallic Soaps!

THE BEACON COMPANY

PURITY · UNIFORMITY · DEPENDABILITY

Chemical Manufacturers

97 BICKFORD STREET · BOSTON, MASSACHUSETTS

In Canada: PRESCOTT & CO., REG'D., 774 ST. PAUL ST., W. MONTREAL

Dependable!

HUNT'S POTASSIUM FERRICYANIDE

Yes, you can depend on Hunt's Potassium Ferricyanide to produce sharper lines, stronger contrasts and greater accuracy in making blue prints. And all this adds up to greater economy because the fine quality of Hunt's Potassium Ferricyanide enables you to get more duplicates from a single master drawing.

MANUFACTURED BY

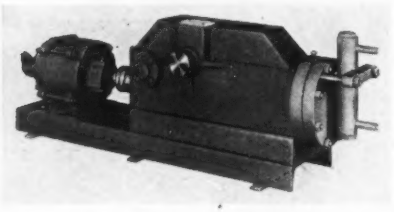
HUNT CHEMICAL WORKS, INC.

271 RUSSELL STREET, BROOKLYN, N. Y.

NEW EQUIPMENT

Proportioning Pump QC 674

Lapp Insulator Co., Inc., Process Equipment Division, announces the new type DEL Wilson Pulsafeeder. This proportioning pump is designed for heavy duty chemical solution feeding against pressures up to 5000 psi., with a constant, manually adjustable rate of feed. Type DEL Pulsafeeder is a horizontal, direct motor



drive, positive displacement, reciprocating diaphragm type chemical proportioning pump. Corrosion-free materials are used in the construction of the reagent heads, which include an exclusive hydraulically-balanced diaphragm. This diaphragm is actuated by piston displacement through a hydraulic fluid. Displacement is accurately measured by the piston in the cylinder. There is no mechanical connection or pressure differential against the diaphragm at any time. Packing glands are eliminated. Chemical solution is completely isolated from operating parts. Nothing can leak or corrode.

Micrometer stroke adjustment of the piston permits adjustment of rate of flow from zero to full maximum, while the machine is in operation, with accuracy of flow maintained throughout a range from minimum to maximum of 1:100. Motion is transmitted to the piston by an oscillating arm which utilizes full motor power without friction or vibration. Piston drive transmission assembly is sealed in a heavy duty cast iron housing, submerged in an oil bath. The machine is equipped with Timken roller bearings. All types of motors can be supplied including drip, vapor, explosion and chemical-proof types.

Type DEL Pulsafeeders are available with one reagent head for single feed or two reagent heads for feeding two chemical solutions simultaneously. On duplex units the two reagent heads are driven from a single motor and may be adjusted while in operation to a uniformly synchronized rate of flow or to varying rates of flow. Five sizes are manufactured which provides a selection of capacities ranging from a few cc. per hour to 10 gals. per hour.

Oscillating Trough Conveyor QC 675

Link-Belt Co. has announced a new conveyor — the Link-Belt oscillating-trough conveyor for handling sharp, jagged, abrasive, wet, oily or hot material at low cost.

The new conveyor consists of a flexibly



supported plate steel trough of rectangular cross-section, which is oscillated back and forth by an eccentric drive at a speed that will result in a forward travel movement of 20 to 50 feet per minute for most materials, depending on the flowability of the material being handled and on the type of unit installed.

The conveyor can be built to handle a wide range of capacities, by simply making the width and depth of its oscillating trough of the right size, and by installing a power drive.

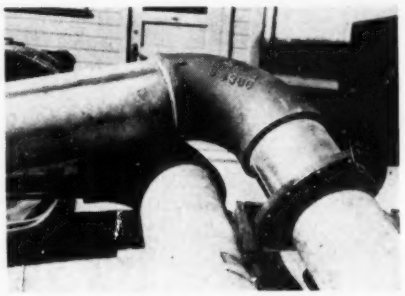
In steel mills, it may be used for handling hot mill scale or conveying scrap steel away from the shears and numerous installations have been made in gray iron and malleable iron foundries for handling both the hot shakeout sand and hot castings. Sixteen months' service shows little wear on the oscillating trough.

There is no spillage of material during conveying, as the conveyor action levels the material off like water.

Socket Welding Pipe Fittings QC 676

Socket welding fittings available in a size range from 1-inch to 14-inch in stainless steel (18-8Mo) are announced by Electric Steel Foundry.

This type of fitting saves weight by

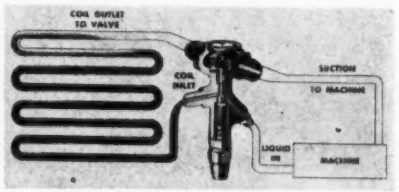


elimination of the flanges and bolts used in the larger pipe sizes. The use of the socket welding fitting also makes possible the use of lighter gage tubing or fabricated pipe, rather than heavier-walled flanged pipe in many cases.

Thermostatic Expansion Valve QC 677

Tenney Engineering, Inc., has announced a new thermostatic expansion valve for regulating refrigerant flow into an evaporator.

The new valve, Model TS-1, is designed



for standard commercial use, such as air conditioning, display cases, and refrigerator boxes. Other models for air conditioning and low temperature use, each with special features, will be announced shortly.

The valve can be taken apart and reassembled easily for cleaning. The use of a feeler bulb is eliminated. The valve is not affected by box temperature, entering warm air, or warm suction lines. It responds instantaneously to changes in suction vapor conditions. Sizing the valve to the job, normally done to prevent "hunting," is unnecessary. There is no "hunting" due to the absence of any appreciable time lag in control, such as is usually encountered between suction line, bulb, control fluid, and valve diaphragm.

CHEMICAL INDUSTRIES TECHNICAL DATA SERVICE

CHEMICAL INDUSTRIES, 522 Fifth Ave., New York 18, N. Y. (12-5)

Please send me more detailed information on the following new equipment.

QC 674	QC 679	QC 683	QC 687	QC 692
QC 675	QC 680	QC 684	QC 688	QC 693
QC 676	QC 681	QC 685	QC 689	QC 694
QC 677	QC 682	QC 686	QC 690	QC 695
QC 678			QC 691	

Name ..... **(Position)** .....

Company .....

Street .....

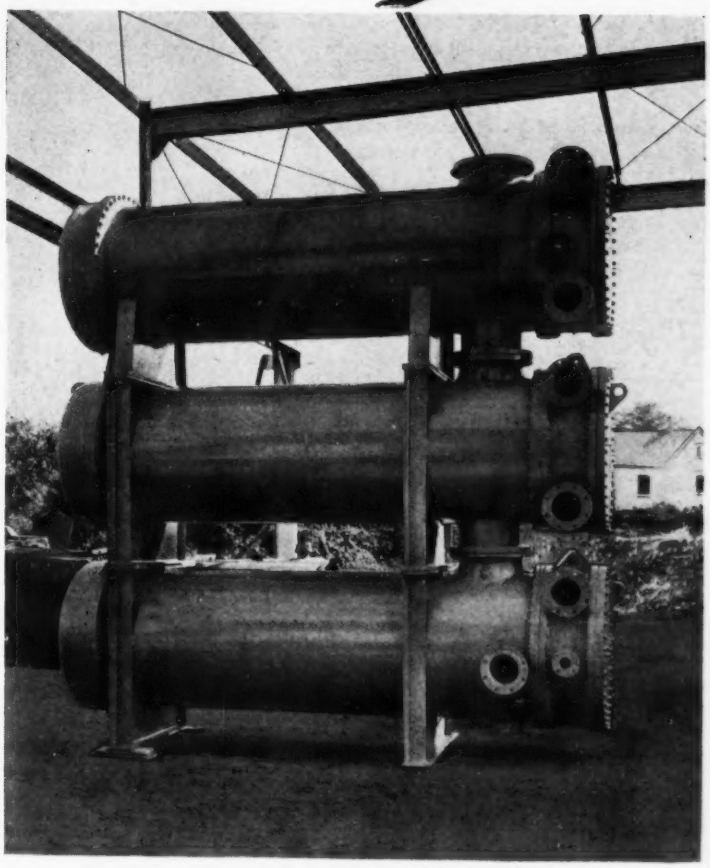
City & State .....

PATTERSON-KELLEY
Heat Exchangers
AND
Process Equipment

SKILLED
SKILLED

in the design of process equipment involving the transfer of heat*

in the manufacture of such equipment from all the commercially used metals**



★ Heat Exchangers	★★ Carbon Steel
★ Kettles	★★ Stainless Steel
★ Autoclaves	★★ Copper
★ Storage Heaters	★★ Aluminum
★ Coolers	★★ Copper-Silicon Alloy
★ Condensers	★★ Stainless Clad
★ Oil Heaters	★★ Nickel Clad
★ Mixers	★★ Bronze

AND HERE ARE

2 Suggestions:

1 ...let us help design the equipment you need

2 ...if it is already designed, let us quote on the manufacture

Our engineers are qualified to design and our shopmen to manufacture to meet any code . . . ASME, ASME-API Paragraphs U68 or U69.

ARMY E NAVY

THE PATTERSON-KELLEY *Company, Inc.*

EAST STROUDSBURG, PA.

NEW YORK 17—101 Park Avenue
CHICAGO 4—Railway Exchange Bldg.
PHILADELPHIA 3—1700 Walnut Street
BOSTON 16—96-A Huntington Avenue

Representatives in All Principal Cities

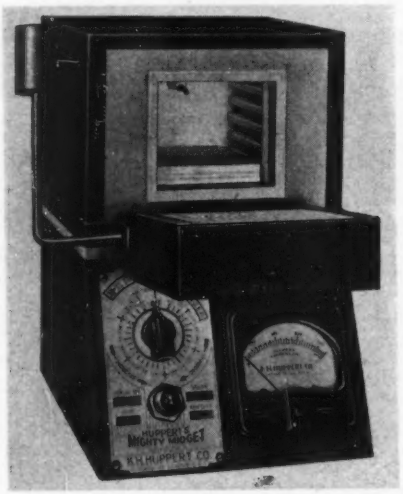
extremely close superheat control (such as 5° F. superheat with plus or minus ½° F. for control) can be maintained. It is particularly adaptable to modern evaporators with forced air, small tubes, short passes and distributor header combinations. It is also ideal for small evaporators or modern close coupled coil and machine combinations. It will close completely above a definite evaporative pressure.

Another outstanding feature of the new valve, is its complete elimination of all need for special "charging" and complicated "cross-charging" to assure operation in a specific temperature range, normally included in "liquid charged" valves. No special installation is required to prevent loss of control caused by condensing of bulb control fluid in valve body, as is needed with so-called "gas-charged" valves.

With this new valve, the use of an external equalizer is unnecessary, as compensation for pressure drop in evaporator or distributor has been designed right into the valve itself. There's no sticking or binding as no stem packing is required.

Midget Furnace QC 678

Dubbed the "Mighty Midget" because of its diminutive size . . . I. D. of only 3"x3"x3"—O. D. 8½"x10½"x8½". This smallest electrically heated furnace of the



K. H. Huppert Co. is equipped with built-in, precision automatic control that maintains any desired temperature in the furnace range (200° F. to 1750° F.) with the accuracy of high-priced, large capacity production furnaces. Extremely low operating costs are experienced as a result of this precision control, which balances power input to heat demand. It operates on 110 A. C. with current consumption of 500 watts.

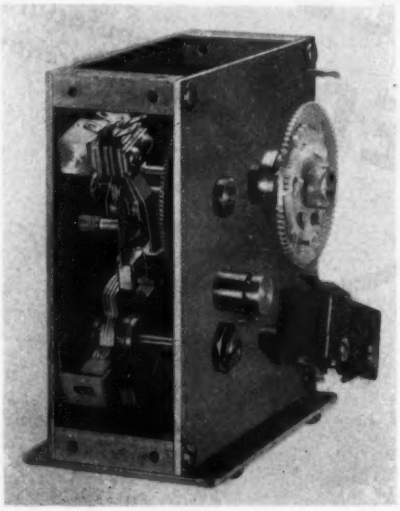
The "Mighty Midget" also features all-steel construction; multi-insulation, special high temperature alloy elements, indicator light, and indicating pyrometer.

The new control features of the "Mighty Midget" are also being added to a number of larger Huppert furnaces.

Constant Speed D. C. Motor QC 679

A new constant speed D. C. motor, small enough to be held in the palm of the hand, has been developed by the Amglo Corp. to supply A. C. motor performance to the D. C. market. The new motor is especially adaptable to synchronous operation formerly possible only by use of A. C. current.

According to test under actual working conditions, the Amglo constant speed



D. C. motor maintains a constant set speed regardless of wide variations in voltage. It is self-starting and builds up full speed almost instantly. Current consumption is extremely low (from 0.06-1 watt), and shaft speeds may be geared from 1 revolution every 24 hours up to 600 r.p.m. It provides the same "time keeping" accuracy with direct current obtainable with alternating current.

The Amglo motor finds use in such fields as time delay controls, recording instruments, and other devices where extreme synchronous accuracy is required. This not only opens entirely new fields for direct current, but also provides an auxiliary motor where batteries are used as "stand by" emergency equipment.

Because of its simplicity of design, the Amglo constant speed D. C. motor has been made available for use at 1½, 3, 6, 12, 24, 32 or 110 volts. Constant speed is maintained even in the case of storage battery operation where the voltage is higher when the battery is being charged.

Molten Steel Platinum Thermocouple QC 680

All patent rights to a new platinum thermocouple, providing practical and accurate results in measuring molten steel temperatures, have been acquired by the Brown Instrument Company, the Industrial Division of Minneapolis-Honeywell Regulator Co., from the Rustless Iron and Steel Corp.

The thermocouple is described by Brown engineers as a device that, when used in conjunction with a Brown ElectroniK Recorder, measures the temperature of molten steel within 45 seconds, even when the steel is covered with slag.

The thermocouple has two basic parts, an immersion head, comprising a platinum and platinum-rhodium thermocouple encased in a fused silica tube mounted in a block of graphite, and a handle which is a 12-foot insulated pipe containing wires leading to the Brown ElectroniK Recorder.

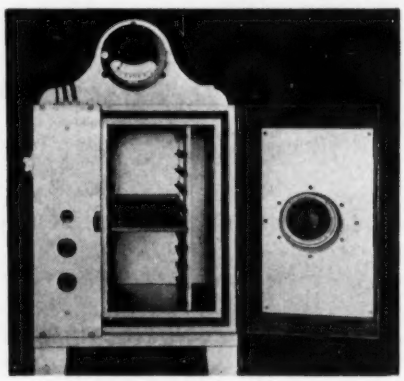
In actual operation the immersion head is manipulated through the furnace door where it is dipped into the steel bath. The exposed tip of the silica tube, containing platinum thermocouple wires, is immersed in the steel itself. A rugged graphite block protects the sensitive silica tube against deterioration by slag and mechanical shock.

The entire operation takes only 45 seconds. Temperature is recorded automatically on a recorder, designed expressly for this application. The recorder, customarily mounted near the furnace, within easy visibility, is one of the new ElectroniK series. It employs a large scale for distance reading. The chart rotates at the rate of one revolution in four minutes and only during reading.

Laboratory Dryer QC 681

An electrically heated laboratory dryer, with automatic temperature controls as standard equipment, has been announced by Proctor & Schwartz, Inc.

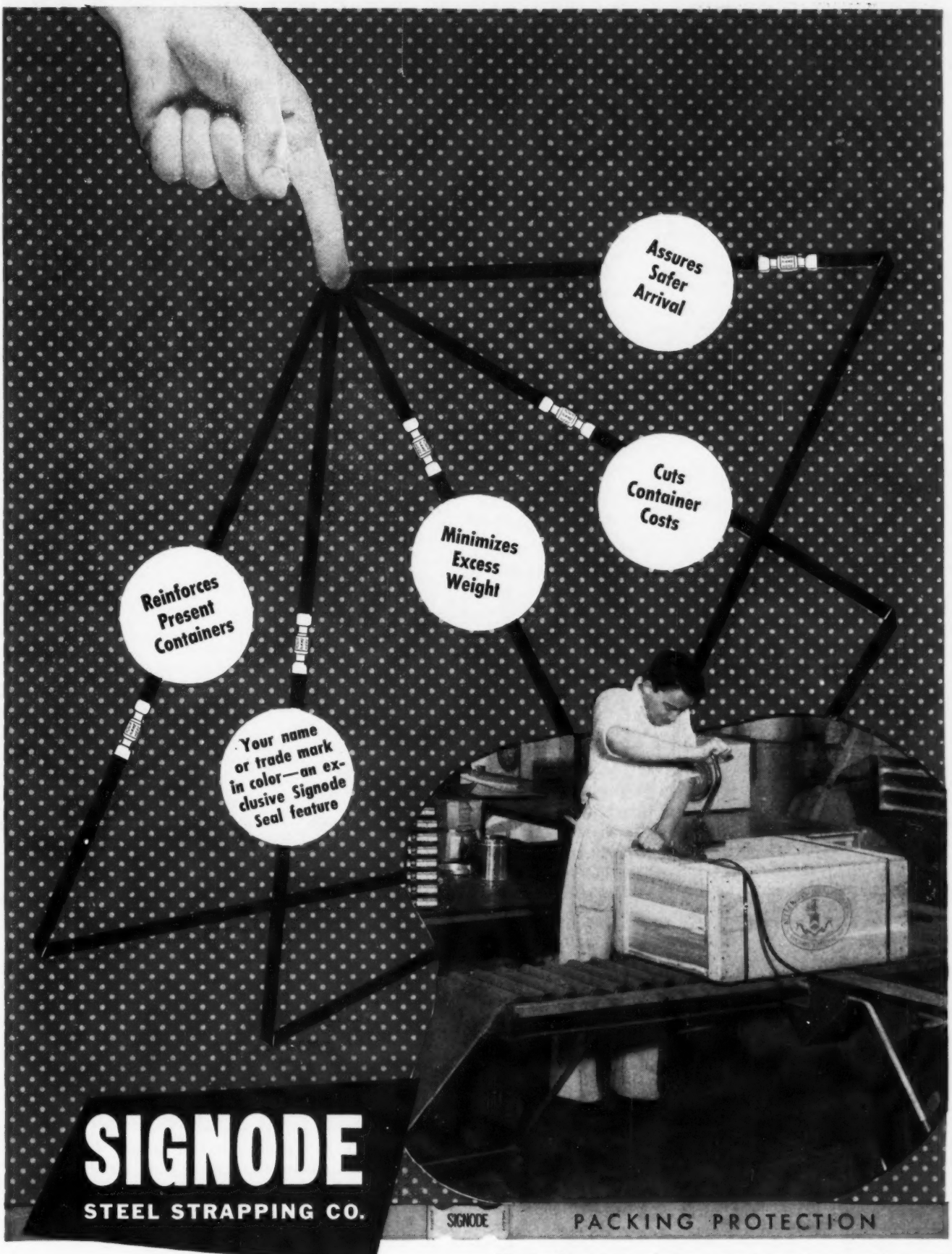
This highly compact machine meets the need for close control and low cost in the drying of small samples of a wide variety of materials. The construction of the dryer is such that materials may be



dried on trays or pallets, or hung on wires, sticks or hooks.

The automatic temperature control feature of this machine is vitally important to laboratory drying. With this feature it is possible to maintain accurate control of temperatures within the dryer at all times during the drying operation. Temperatures, which range up to 300° F., are produced by six electrical heating elements. Hand switches control each heating element.

Positive circulation of heated air is maintained actively throughout the in-



EXPERIENCE POINTS out that everybody profits when you protect your shipments with Signode Steel Strapping—a method applicable to practically all types of containers, or shipping units, from small, light boxes to large bundled or palletized loads of heavy products.

It's timely now to plan an inventory of your packing and shipping procedure with the competent help of a skilled Signode Packaging and Carloading Engineer.

SIGNODE STEEL STRAPPING CO.

2662 N. Western Ave., Chicago 47, Ill.

395 Furman St., Brooklyn 2, N.Y. 481 Bryant St., San Francisco 7

Branches in 21 Principal Cities

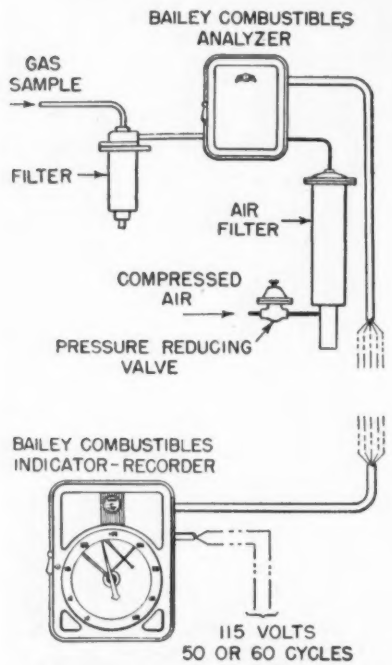
terior of the cabinet, and is produced by a direct motor-driven fan. Exhaust of moisture-laden air is provided for in order to keep humidity inside the dryer at the ideal point at all times during the drying operation.

The cabinet and door of the dryer are constructed of heavy gauge sheet metal and are insulated with 2" thick rock wool and cork. This construction effectively prevents heat loss and aids in maintaining uniform temperatures. The interior can be observed during the drying process through the porthole without opening the door.

Outside dimensions of the cabinet are 31" wide, 36" high and 25" deep, exclusive of the stand or table and exclusive of the temperature control on the top. There is room in the dryer for 10 trays, 12"x20" each, with a total surface area of 2400 square inches. The dryer is usually mounted on a specifically constructed stand, which is extra equipment, 2' high, by 2'7¼" wide, by 2' deep.

Combustibles Recorder-Controller QC 682

A new automatic analyzer and recorder for indicating, recording and controlling the combustibles content of a gaseous mixture has been developed by the Bailey Meter Co. This instrument has been successfully applied to precision control of furnace atmospheres and chemical processes, as well as combustibles measurements in the petroleum, metallurgical, automotive, and chemical industries.



The analyzer and recorder provide a continuous graphic analysis almost instantly, and they are said to be responsive to changes of .05 per cent combustibles. Sustained accuracy is said to be within .25 per cent.

In operation a continuous gas sample is mixed with compressed air and burned on a catalyst-filament which reaches a temperature proportional to the combustibles content. Since the filament resistance is a function of temperature, a simple resistance bridge connected to a null-balance electronic recorder completes the installation. It may be calibrated in per cent combustibles, mixture ratio or other desired terms.

Pneumatic control or electric alarm contacts may be provided on both one and two-pen recorders. A two-pen recorder utilizes separate analyzers so that the speed is not impaired by switching, and the two records are independent of each other. Variable fuel quality does not affect the accuracy of control on installations of this type.

Industrial Oven QC 683

New, mass-produced RS industrial ovens, in sizes from 2'x2'x3' to 4½'x6'x9', are adaptable for all baking and drying processes up to 500° F. and speed baking by as much as 50%. Manufactured by the Despatch Oven Co., the units are



self-contained and require only lead-in of gas or electricity for complete installation.

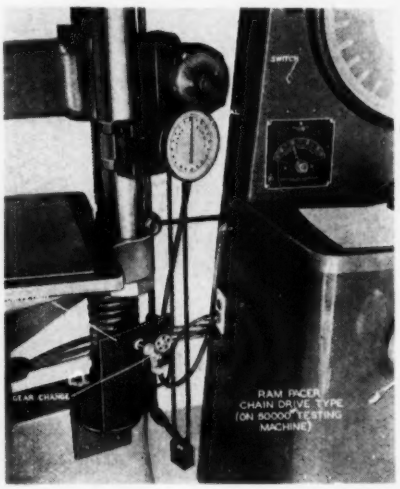
A special loading dolly and shelf arrangement permits easy loading and maximum use. Upright position also means easier loading plus floor space saving. Automatic controls and quick starting make the oven readily adaptable to varying types of operation.

These ovens are now successfully in use on radio and also radar, coil and armature drying and baking, carbon embrittlement and aluminum aging, baking a variety of synthetic finishes, Japans, varnishes, lacquers, enamels, and all kinds of dehydration and drying.

Ram Pacer QC 684

In testing metals, plastics and woods many specifications require that the loads be applied at certain and exact speeds. To date this control has been difficult to obtain as no simple, fully automatic and satisfactory pacing device has been available. To fill this important need the Southwark Division of the Baldwin Locomotive Works has developed the Southwark Ram Pacer.

The new device, which is attached to a standard hydraulic testing machine, gives control over the crosshead movement at eight preset speeds, .01, .02, .05, 0.1, 0.2, 0.4, 0.5 and 1.0 inches per minute. These speeds are obtained by gear changes on the synchronous motor drive unit. This unit is attached to the fixed frame of the machine while the dial portion of the apparatus is attached to the moving crosshead. The pointer sprocket wheel and the sprocket wheel on the drive unit are connected by an endless weighted chain. With



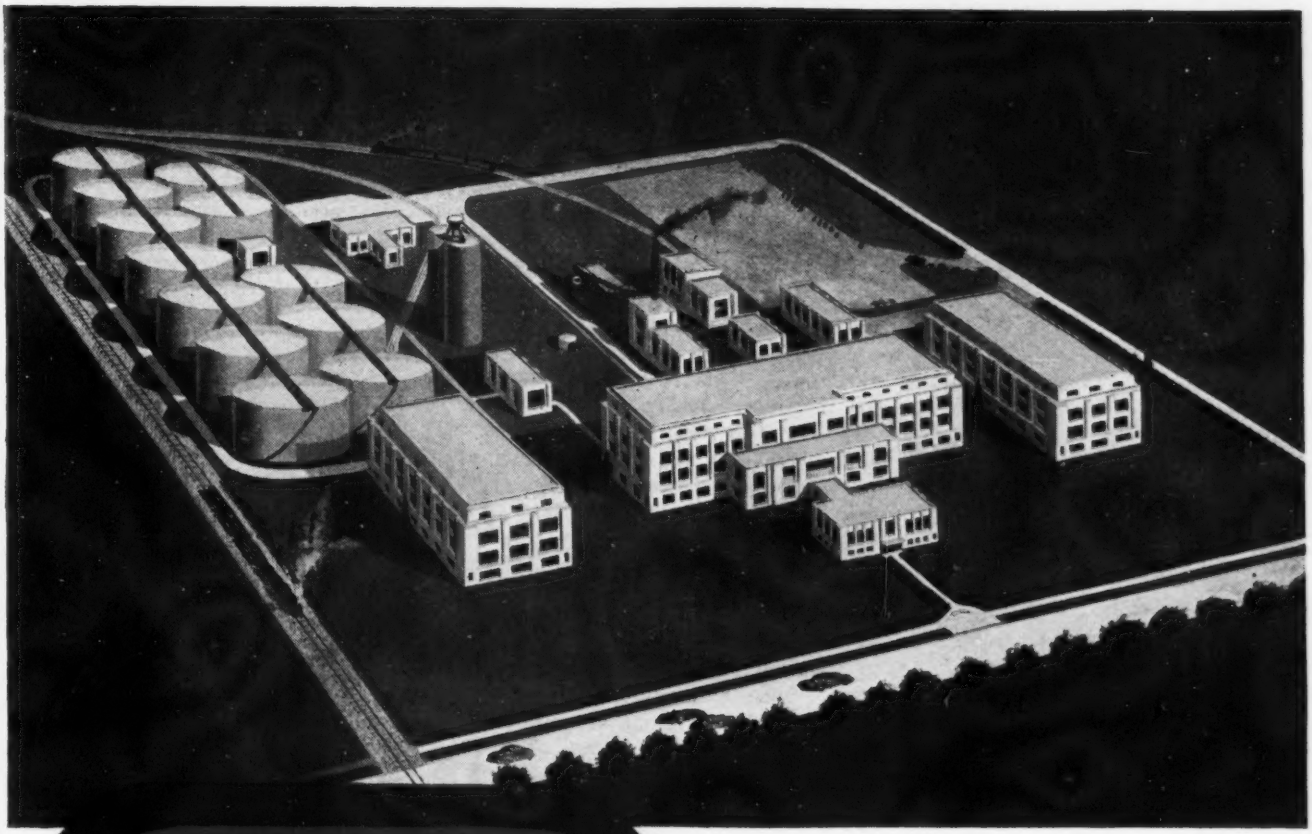
the gear selected for a certain speed the hydraulic valve on the testing machine is opened until the loading head rises to a point where the dial pointer stands still. This means that the pointer sprocket and the motor driven sprocket below are moving at exactly the same speed. They counteract each other. This adjustment is very simply made.

The Southwark Ram Pacer actually is a combination tool since it also can be used as a deflectometer. The dial is divided into two hundred graduations of .001 of an inch each, and if the synchronous motor is not turned on, the dial will indicate the deflection of a specimen under test.

Electronic Voltage Regulator QC 685

The Sorenson electronic A. C. voltage regulators automatically maintain constant A. C. voltage supplied to a piece of equipment. With the line voltage fluctuating over a range of from 95 to 130 volts, the output of the regulator unit is automatically maintained to within ¼ of 1% of a desired value. The output voltage of the regulator can be set anywhere between 110 and 120 volts.

Automatic voltage control is accomplished by electronic means, and there are no moving parts in the regulator. Since the regulators are not of the resonant type, they are not affected by frequency variation of 10% in the line voltage. Similarly the regulators are not affected by wave form distortion in the power supplied by the line, and they do not introduce wave form distortion in any considerable amount—maximum distortion of the output wave is less than 5%.



Amino Products

announces a new

plant to be constructed at San Jose, California for the production of Mono Sodium Glutamate and other Amino Acid Products

To meet the rapidly growing requirements of quality food processors for Mono Sodium Glutamate, International Minerals & Chemical Corporation is building a new plant at San Jose, California, to supplement production at its Rossford, Ohio, plant.

The new San Jose plant will be in production in 1946. It will be completely modern in design and construction, with every facility to utilize the technological "know-how" gained by years of research and production experience.

Mono Sodium Glutamate is the salt of one of the Amino Acids, a pure vegetable food product produced from the hydrolysis of wheat or sugar-beet proteins. It is well known among epicures, in this country and the Orient, for its unique quality of enhancing the subtle and delicate flavors of fine foods.

Rapid progress has been made in recent years by American food technologists in the development of new uses for Mono Sodium Glutamate to satisfy discriminating consumers' outstanding preference for quality foods.

Amino Products looks forward eagerly to the time when greatly expanded production of Mono Sodium Glutamate, at the San Jose and Rossford plants, will make possible its extensive use by America's leading food processors to give millions of people new pleasure and delight in their enjoyment of fine foods.

Glutamic Acid, Glutamic Acid Hydrochloride, Betaine Hydrochloride, and other Amino Acids and Protein Derivatives will also be produced at both the San Jose, California, and the Rossford, Ohio, plants for food and pharmaceutical purposes.

Amino Products

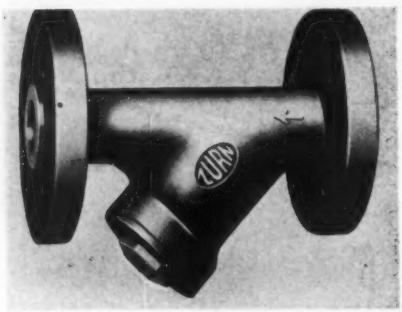
Food and Pharmaceutical Division

International MINERALS & CHEMICAL CORPORATION • GENERAL OFFICES: 20 NORTH WACKER DRIVE, CHICAGO 6

Regulators for 60 cycle applications are available in various models to control loads from 40-2000 watts. The 60 cycle models are constructed for rack mounting. The chassis is fastened to a standard 19" relay rack panel and a metal protective cabinet is also furnished for housing the regulator where it is not desired to install the unit in a rack. A light weight, shock mounted 400 cycle model (total weight 16½ lbs.) is also available.

Strainer QC 686

A "Y" strainer has been designed by J. Zurn Mfg. Co. with a snug fitting strainer sleeve unit to assure trouble free operation. This strainer sleeve is removable but it is



so designed that it cannot get out of place or vibrate when in use, enabling the unit to be installed in almost any position on a pipeline. When service conditions require it, the strainer basket is magnetized for intercepting metal particles.

All units are hydrostatically tested for the service pressures under which they will be required to operate. They are available with or without a cleanout plug, or can be furnished with a threaded blow-off connection.

This "Y" strainer is manufactured in cast bronze, steel, semi-steel or cast iron. A wide range of sizes is available for flanged, welded or threaded connections. "Y" strainers include duplex, vertical, and horizontal types; 90° and 180° pressure and suction types.

Diesel Engine Shut Down QC 687

Viking Instruments Inc. has just announced the new Viking type R-18 safety control system for the shut-down of Diesel engines when the temperature of the circulating water system becomes too high, or when there is insufficient lubricating oil pressure.

The shut down system operates by means of a pressure-responsive unit, housing a bellows which expands with decreasing pressure. This expansion in turn releases a trigger so that the rod and spring operate the fuel pump or governor lever to shut down the engine. This drop in pressure (and consequent shut-down of the engine) may be caused by failure of the oil supply, or opening of the thermostatic by-pass valve due to increase in circulating-water temperature.

This self-operating system has the inherent advantage of not requiring any electrical power or additional accessories that most other shut-down and alarm systems require. Consequently, trouble often encountered by blowing of fuses, and electrical power failures are eliminated.

Industrial Apron QC 688

A light duty industrial apron to give maximum protection against oil, which is also acid, caustic and waterproof, is announced by The B. F. Goodrich Co. It is double coated by the calender method with Ameripol, the company's exclusive type of synthetic rubber.

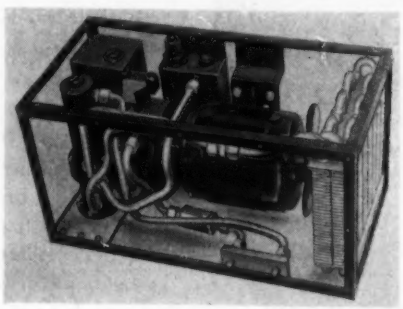
Made in two sizes, 29x35 inches and 34x45 inches, it is constructed with hemmed edges and attached neck and waist tapes. It is suitable for use on light assembly and bench work in chemical plants, laboratories and other applications where a lightweight garment is needed to protect a worker from acid, oil, caustic or water.

The garment was thoroughly pre-tested with all mineral and vegetable oils, including cutting, lubricating and machine oil. It is also impervious to gasoline and benzol. It is unaffected by 24 hours complete immersion in 50 per cent concentrations of sulphuric, nitric and hydrochloric acids, and 25 per cent solution of caustic soda. The garment also has a very high abrasion resistance.

Heat Dissipating Unit QC 689

A new heat dissipating unit for use in television, radar, short wave radio communication, high pressure mercury lamps, x-ray tubes, induction heating units and many similar products is announced by The Eastern Engineering Co.

The units were originally designed for the ground, airborne and water services

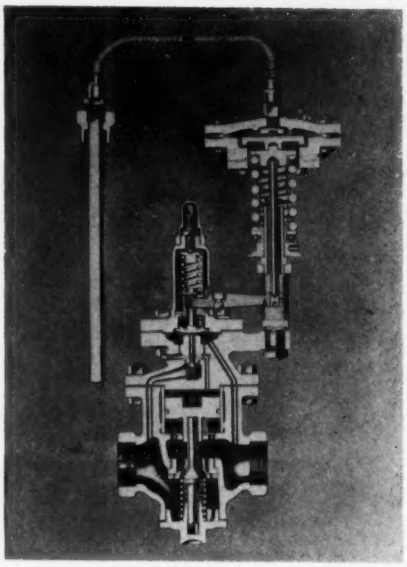


of the armed forces and are now being manufactured for commercial heat dissipating applications. They are furnished complete with thermostat control, thermostatic valves and flow switch. The unit shown will dissipate up to 1200 watts with a constant controlled temperature, irrespective of surrounding temperature, within a close heat control range of 2° C. This unit, size 16" x 7½" x 7½", is available in steel, bronze or aluminum. Other models can be built to dissipate up to 5000 watts. Smaller models can, of course, be built where the need is for a smaller unit and the wattage is much lower.

Temperature Regulator QC 690

A self-contained, spring loaded, internal pilot, piston operated temperature regulator for steam service, has been announced by Leslie Co.

A prominent feature of the new regulator is Duo-Matic control, whereby ac-



curate temperature regulation and pressure control are obtained simultaneously with a single regulator.

The new regulator has a wide range, rugged thermostatic element with 100° F. adjustable temperature range. It is single-seated for positive dead-end control and equipped with metal diaphragms, using no bellows or packing glands.

All wearing parts are renewable. 100% interchangeability allows complete overhaul without removal from the pipe line. Corrosion and wear resistance is obtained with the use of stainless steel hardened wearing parts. Vital parts are hardened to at least 500 Brinell.

A vapor-filled thermostatic element acting through the upper diaphragm and lever opposes a pressure limit spring and determines the steam pressure delivered by the regulator to the heat exchanger. Manual compression of the limit spring determines maximum outlet pressure and opens the controlling valve, admitting high pressure steam from inlet body port to top of piston which opens main valve. The outlet steam pressure acting under the steam diaphragm balances compression of limit spring, throttling the controlling valve and limiting the maximum outlet pressure.

The temperature at which the vapor pressure starts to oppose the limit spring and decrease outlet steam pressure is set on the adjusting spring. This spring opposes the vapor pressure through the large upper diaphragm and by means of this spring the temperature at which all steam



VELSICOL Announces

the powerful.... NEW toxicant,

VEL-TOX

[AR-Concentrate]

setting NEW standards of performance

1% VEL-TOX produces 99-100% KILL OF FLIES

(PEET-GRADY METHOD)

10% VEL-TOX produces 99-100% KILL OF ROACHES

VEL-TOX incorporates VELSICOL 1068 *, the epoch making achievement of fundamental research in petroleum chemistry, a field in which VELSICOL has pioneered.

The phenomenal insecticidal properties which VEL-TOX exhibits makes it a contribution of major importance to the science of Entomology and the Insecticide Industry.

Simply adding 1% by volume of VEL-TOX to deodorized kerosene produces a spray with 99-100% Kill of flies by Peet-Grady method. Adding 10% of VEL-TOX by volume yields a spray with a 99-100% Kill of roaches. The extremely low volatility of VEL-TOX assures prolonged toxic action. Of almost equal interest to the spray manufacturer as the 100% effectiveness of this Concentrate, is the ease of formulating VEL-TOX Insecticides, and the quality of the finished spray; there is the absence of any solubility difficulty, and there is freedom from the odor problem.

You will be anxious to test VEL-TOX in your formulations, to note its high quality characteristics, to observe the effectiveness of its concentrated power. Samples for this purpose will be gladly furnished on request.

A comprehensive paper on the subject of VELSICOL 1068 awaits publication in an early issue of the Journal of Economic Entomology.

VELSICOL Corporation

Manufacturers of Insecticides • Hydrocarbon Resins • Ceresin Core Oils • Aromatic Solvents

General Offices: 120 East Pearson Street • Chicago 11, Illinois

VELSICOL Corporation, Dept. 12-C1
120 East Pearson Street
Chicago 11, Illinois

Please send samples and data on VEL-TOX.

Name _____

Street _____

City _____ State _____

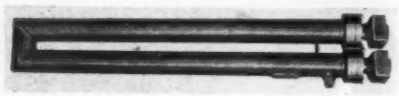
to heater will be shut off can be accurately set.

A temperature drop of 1° F. at bulb reduces vapor pressure, allowing the limit spring to open the controlling valve and deliver increased steam pressure to the heat exchanger.

Outlet steam pressure is always directly proportional to the change in temperature at the bulb, and this pressure is automatically maintained regardless of the volume of steam used by heater or variations in supply pressure.

Electrical Heat Exchanger QC 691

The Brown Fintube Co. has just introduced a new heat exchanger that employs



electrical resistors as the heat source.

According to a company spokesman, the electrical resistors are encased inside a length of standard Brownweld fintube. Current density of typical resistors now in use is 4 K.W. per linear foot of fintube.

Notwithstanding this high rating on the interior of the fintube, the rating on the outside surface (due to the large ratio of exterior to interior area of the fintube) is only about 8 watts per square inch, thus avoiding high skin temperatures that might cause carbonization of heat sensitive materials.

Brownweld fintubes fitted with electrical resistors are thoroughly practical for use in double tube, bayonet, vertical immersion or other types of heat exchangers. They permit great flexibility as to the size and capacity of the equipment.

Brown Fintube electrical resistor heat exchangers are ideally employed when steam is not available—when it is desired to eliminate the auxiliary piping required when steam is used—or to heat the fluid to higher temperatures than can be reached with steam.

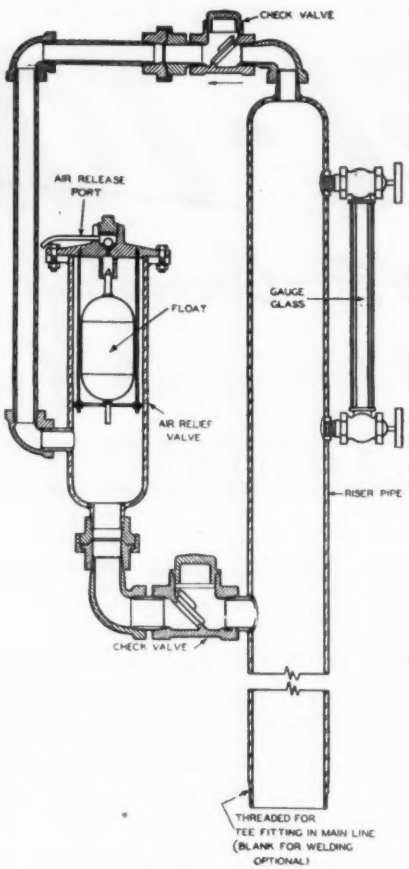
Additional Listings for November, 1945 Issue

The tabulation below was inadvertently omitted from the tabulation of New Instrumentation and Process Control Equipment on Page 860 of the November, 1945, issue.

Air Relief Valve QC 692

Oceco V-404 air relief valves of the Johnston and Jennings Co. are designed for installation at the high points of pipe lines. They provide an easy and effective method of removing air or gases trapped in the line, which otherwise tend to build up in volume and pressure, stalling the pump, reducing the capacity of the line—and sometimes even blocking the flow of liquid entirely.

With reference to the accompanying diagram—gases and liquids are forced



up the riser pipe by the pressure in the line, filling the piping, and causing the float to rise, thus closing the air release port. As more and more air accumulates, the level of the liquid is forced lower and lower—the float drops down opening the release port, and letting the air and gas escape to the atmosphere.

Oceco V-404 air relief valves are furnished complete with liquid level gauge—with riser threaded to screw into a T fitting, or blank for welding to the pipe line, 2", 3", 4", 6", 8", 10" and 12" sizes are standard, others on special order.

Inter-Communication Plant Control QC 693

A new, voiceless inter-communication control known as Temporator has been designed by the Simplex Time Recorder Co. to bring time, ost, employee, production, materials, inventory, shipping under instant, complete, central control and to integrate and coordinate other related plant-management activities.

The outstanding feature is fast operation. Up to four thousand messages per day—an average of one every eight seconds—may be transmitted directly to and from employees through one operator seated at a 6-unit central control board connected with any number of sub-station dispatchers.

Speed is attained through visible signal dialing. Communications are dialed the same as a dial telephone is used. Symbols identify each production, operation, material, employee, order, lot part number, etc. A combination of symbols delivers any desired directive or report. Symbols are flashed upon and are visible simultaneously at both central control board and any designated sub-station dispatcher.

Work schedules may be interrupted and rearranged and employees can readily note impending delays for rapid correction.

At central control board a constant flow of production and other control figures becomes instantly available for costing, extending, posting, inventory. There, the finger of management is kept upon the pulse of the entire organization. For example: A customer's order, contingent upon a delivery date, may be promptly accepted or rejected.

Asbestos Gaskets QC 694

The line of Palmetto packings of Green, Tweed and Co. has been expanded to include high-pressure folded asbestos gaskets, asbestos metallic sheet packing, and asbestos metallic gasket tape.

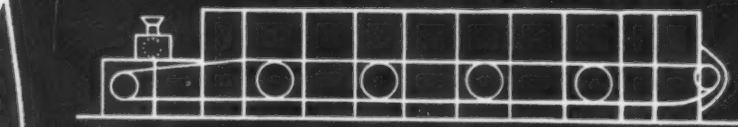
Palmetto high pressure folded asbestos gaskets, for handholes, manholes and tube plates of boilers and other apparatus subject to heat and pressure, have two important features. Each gasket is carefully handblocked to accurate size, and the seam is on the outside, away from the

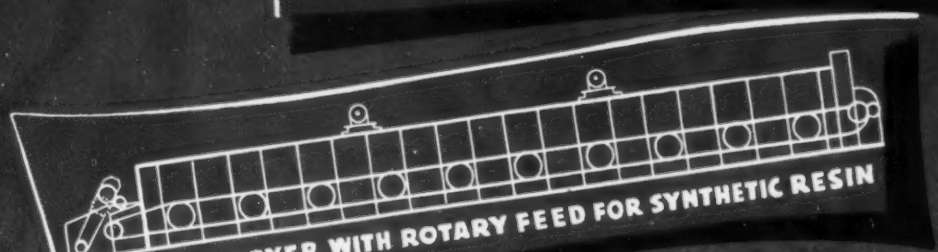
INSTRUMENTATION AND PROCESS CONTROL—New Equipment Developed 1944-5

Type of Equipment	*New Features,*	*Applications*	*Company*
Liquid level and interface control.	Electronic oscillator generates a high frequency a.c. which is routed to an immersion condenser, where a change in level changes capacitance, changing oscillator frequency in turn varying current allowing actuation of control apparatus.		Wheelco Instrument Co.
Combustible recorder.	Sample is mixed with air and burned on catalyst filament which reaches a temperature proportional to combustibles content. Filament forms part of a resistance bridge by which combustible content is controlled.		Bailey Meter Co.
Air-operated temperature controller.	"Cyclelog" has automatic rate-of-rise control function added to deferred action and elapsed time feature. Knob adjustment for °F/min. Requires only connection to compressed air supply and immersion of bulb in vessel or line to start operation.		Foxboro Co.
Liquid level control.	Contact of liquid with antenna varies volume of electrons emitted by amplifying tube which activates a relay to allow control.		Lumenite Electronic Co.

PROCTOR DRYERS

designed for PLASTICS



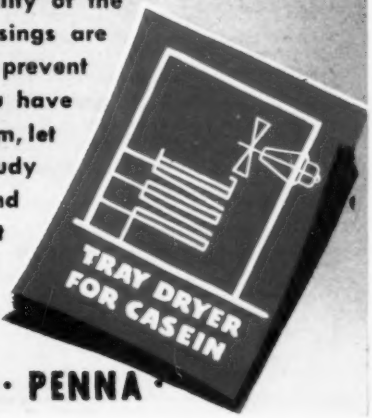




meet manufacturers' individual capacity requirements . . .
assure controlled drying . . .

The importance of CONTROLLED DRYING in plastics manufacture cannot be over emphasized. Plastics, subjected to too high temperatures or subjected to lower temperatures for too long a time, during the manufacturing stage, are not well adapted to further processing. Proctor engineers have designed many dryers for use in the drying of urea-formaldehyde, casein and soya bean plastics. In each case, the dryer has been designed so that it is possible to control drying time and temperatures to meet the specific requirements of particular plastic being dried.

When drying is done in a continuous conveyor dryer, the speed of the conveyor can be regulated. Temperatures throughout the entire drying process are carefully regulated and air-circulation is directed in the most effective manner. Automatic feeding devices have been developed to control the amount of material fed to the dryer at all times. The combination of these accurately controlled factors results in uniformly high quality of the finished plastics. Housings are designed and built to prevent escape of fumes. If you have a plastics drying problem, let Proctor engineers study your requirements and recommend an efficient dryer to meet your needs. Write today.



PROCTOR & SCHWARTZ · INC · PHILADELPHIA 20 · PENNA.

New Equipment Index
Volume LVII, July-December, 1945

Air Pump, Panel Mounted Dry 110
Air Relief Valve 1102
Angle Compressor 908
Angle Molding Press 116
Apron, Industrial 1100
Aprons 904
Arc-Welding Electrode 296
Asbestos Gaskets 1102
Automatic Molding Machine 116

Balancing Ways 482
Beam Scale, Portable 908
Belt Hooks, Wire 116
Bench, Package-Type Work 904
Breathing Apparatus 906
Bridge, Resistance 610
Bucket Carrier 666

Cabinet Oven 902
Carrier Bucket 666
Cart, Lubrication 112
Cathode Ray Tube, Double Beam 670
Cleaner, Tube 290
Clothing, Safety 116
Combustibles Recorder-Controller 1098
Compartment-Multi, Feeder 668
Compression Press for Transfer Molding 670
Compressor
  Angle 908
  Rotary Gas 482
Constant Speed D.C. Motor 1096
Contactor Timing 294
Controller, Potentiometer 486
Control, Pressure Gage and 900
Cooling Unit 116
Couplings, Pipe 666
Cut-off, Water 292

D.C. Motor, Constant Speed 1096
Deflectometer 904
De-Ionization 292
Detector, Smoke 290
Dielectric Heater 112
Diesel Engine Shut Down 1100
Dollies 904
Double-Beam Cathode Ray Tube 670
Drum Handling 486
Dry Air Pump, Panel Mounted 110
Dry Ice Liquefier 672
Dual Stream Fire Extinguisher Nozzle 114

Electrode, Arc-Welding 296
Engine Shut Down, Diesel 1100
Expansion Valve, Thermostatic 1094

Feeder, Multicompartment Feeder 668
Fire Extinguisher
  New 114
  Trigger for 484
Fire Extinguisher Nozzle, Dual Stream 114
Fittings, Socket Welding Pipe .....
Furnace, Midget .....
Flange, Pipe Joint 108

Gage and Control, Pressure 900
Gage Stiffness 292
Gage, Vacuum 902
Gas Compressor, Rotary 482
Gaskets, Asbestos 1102
Gate for spout Magnet, Safety 490
Glove, Safety 490
Gravity Indicator, Specific 910

Handling, Drum 486
Heater, Dielectric 112
Heater, Water 902

Indicator, Specific Gravity 910
Industrial Apron 1100

Light Reflector 904
Liquefier, Dry Ice 672
Low Voltage Rectifiers, Stabilized 666
Lubrication Cart 112

Magnet, Permanent Spout 486
Measurements, Temperature 294
Midget Furnace 1096
Moisture Register 666
Molding, Compression Press for Transfer 670
Molding Machine, Automatic 116
Molding Press, Angle 116
Molten Steel Platinum Thermocouple..
Motor, Vertical 902
Multicompartment Feeder 668

New Fire Extinguisher 114
Nozzle, Dual Stream Fire Extinguisher 114

Oscillating Trough Conveyor 1094
Oven, Cabinet 902

Package-Type Work Bench 904
Panel Mounted Dry Air Pump 116
Permanent Spout Magnet 486
Pipe
  Couplings 666
  Fittings, Socket Welding 1094
  Joint Flange 108
  Seals, Plastic 904
Plastic Pipe Seals 904
Platinum Thermocouple, Molten Steel 1096
Portable Beam Scale 908
Position Indicator, Valve Stem 1104
Potentiometer Controller 486
Press, Angle Molding 116
Press for Transfer Molding, Compression 670
Pressure Gage and Control 900
Pressure Switch 114
Prints, White 108
Proportioning Pump 908
Pump
  Panel Mounted Dry Air 110
  Proportioning 908
  Safety 484
Pumps 114, 486

Ram Pacer 1098
Recorder, Controller, Combustibles 1098
Recorder, Running Time 484
Reflector, Light 904
Regulator, Temperature 1100
Relief Valve 108, 672
  Air 1102
Resistance Bridge 610
Rotameter Rotor 488
Rotary Gas Compressor 482
Rotor, Rotameter 488
Running Time Recorder 484

Safety Clothing 116
Safety Gate for Spout Magnet 490
Safety Glove 490
Safety Pump 484
Seals, Plastic Pipe 904
Selenium Rectifier 906
Shear, Specimen 902
Sheave, V-Belt 668
Shut Down, Diesel Engine 1100
Smoke Control 290
Smoke Detector 290
Socket Welding Pipe Fittings 1094
Specific Gravity Indicator 910
Specimen Shear 902
Spout Magnet, Permanent 486
Stabilized Low Voltage Rectifiers 666
Stiffness Gage 292
Strainer 912
  "Y" 1100
Stripper, Wire 110
Sweeper 114
Switch, Pressure 114
Switches, Time 902

Tank 906
Temperature Measurement 294
Testing Machine 912
Temperature Regulator 1100
Thermocouple, Molten Steel Platinum 1096
Thermostatic Expansion Valve 1094
Thin Wall Tubing 108
Time Recorder, Running 484
Time Switches 902
Timing Contactor 294
Transfer Molding, Compression Press For 670
Transformer Welder 668
Trigger For Fire Extinguisher 484
Trough Conveyor, Oscillating 1094
Tube Cleaner 290
Tube, Double-Beam Cathode Ray 670
Tubing, Thin Wall 108

Unit, Cooling 116

V-Belt Sheave 668
Vacuum Gage 902
Valve
  Air Relief 1102
  Relief 108, 672
  Stem Position Indicator 1104
  Thermostatic Expansion 1094
Vertical Motor 902
Voltage Rectifier, Stabilized Low 666

Water Cut-Off 292
Water Heater 292
Ways, Balancing 482
Welder, Transformer 668
Welding Machine 670
White Prints 108
Wind-up Machine 668
Wire Belt Hooks 116
Wire Stripper 110
Work Bench, Package-Type 904

"Y" Strainer 1100

pressure. These gaskets are made from brass wire inserted asbestos yarn, woven into a strong cloth, coated and cemented with a heat-resisting compound, folded and pressed into shape.

The woven cloth from which these gaskets are made is also available in sheet form as Palmetto asbestos metallic sheet packing. These sheets are supplied with a heat-resistant coating and are suitable for cutting gaskets for cylinder heads of gas, oil and steam engines, and for similar services.

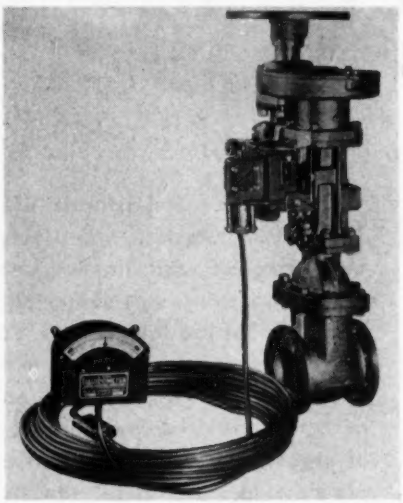
Palmetto asbestos metallic gasket tape is also made from the same cloth. This folded tape is coated with heat-resisting compound, and is particularly convenient for making gasket strips, such as required along the lip of large rectangular tanks.

Valve Stem Position Indicator QC 695

A new remote-reading hydraulic valve stem position indicator, developed by The Liquidometer Corp. for the Navy to aid in controlling and isolating below-deck fires aboard carriers and other large warcraft, is now available for many industrial applications.

These indicators show the open or shut position of valves which control the flow of fuel and other liquids. Development of the indicator was made in conjunction with Jenkins Bros., who developed the transmitter and hydraulically-actuated mechanism for opening or closing the valve.

In operation valve stem position is transmitted to the indicator dial through the Liquidometer temperature-compensated dual hydraulic transmission system,



which requires no outside source of power. Thus it will continue to function in case of temporary failure in the plant's power supply. With this system, the indicator dial may be located at the transmitter or any reasonable distance from the valve.

When used in industrial plants, all the indicators can be located on a single panel with the transmitters adjacent, thus making it possible for one operator to see and control the position of every valve.

Church & Dwight Co., Inc.

Established 1846

70 PINE STREET NEW YORK

Bicarbonate of Soda

Sal Soda

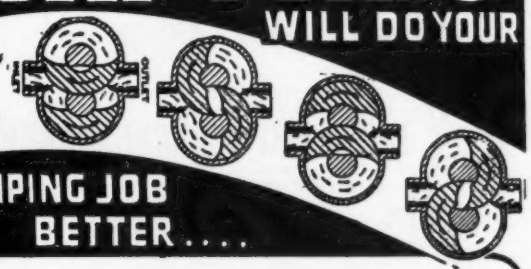
Monohydrate of Soda

Standard Quality

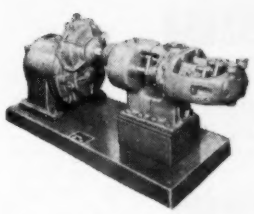
BUMP PUMPS

WILL DO YOUR

here's why



PUMPING JOB BETTER....



Send for completely illustrated catalog.

The illustrated principle of operation shows why Bump Industrial Pumps have low maintenance cost. There are no grease cups, and no internal threads — only 2 moving parts, which make them easy to clean and easy to maintain. As one company that has used a large number of Bump Pumps for years states: "They do a better job at a lower total cost to us than any other pump now offered on the market". Bump Industrial Pumps are positive displacement at any speed or pressure . . . self-priming under high vacuums or against head pressures, and deliver a constant volume per revolution, regardless of speed or pressure. Available in capacities from ½ to 400 GPM and in different models and metals suitable to the job.



The **BUMP** PUMP CO.

LA CROSSE • WISCONSIN



New World Markets

It is good psychology to introduce your product *now* into the export field. Export trade is already possible with 147 foreign countries, where markets are virtually "product-starved".

Economists predict that products *now* made available to foreign buyers will be the famous "brand names" of tomorrow.

Accreylon, Export Managers, believe that many American manufacturers can profitably allocate a small percentage of their production for export, thereby establishing the "commercial beach-head" that will start paying dividends now and continue for years to come.

Accreylon relieves its clients of all details of financing, shipping, delivery and collections. Purchases are made for our own account, reselling abroad is on our own responsibility.

We charge no fee.

Accreylon Company, Inc.

DEPT. H-12

130 West 42nd Street

New York 18, N. Y.

PACKAGING & SHIPPING

by T. PAT CALLAHAN

Palletizing Comes Into Its Own

NO OTHER technique for safe packaging, handling, and shipping of chemicals has come to the fore as quickly —and has every evidence of having come to stay—as palletizing. This method of materials handling is being studied by practically all of the large chemical companies, and it is almost a certainty that it will revolutionize the methods formerly used for the packing and shipping of materials.



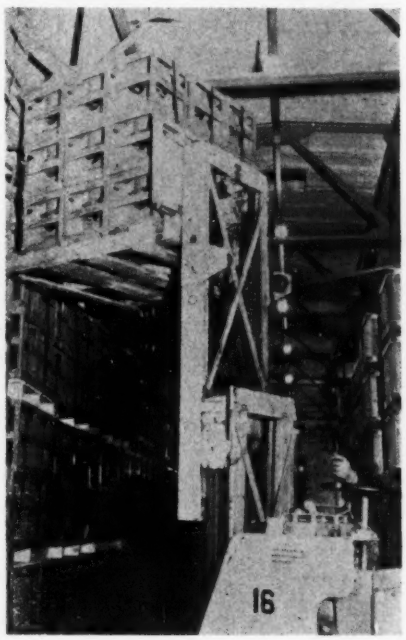
T. Pat Callahan

The urgencies of war, and the necessity to cut corners in order to deliver essential goods to all corners of the globe, spurred the engineers of the various armed services to develop quick, safe, and practical methods of moving single units in groups, rather than individually handling each unit.

For information as to how this was accomplished by one branch of the armed services, we are indebted to the Naval Ordnance Materials Handling Laboratory, U. S. Ammunition Depot, at Hingham, Mass., for the pictures and charts published with this article. These pictures and charts have been taken from *The Palletizer,* published by the Naval Ordnance Materials Handling Laboratory.

Naturally, the first consideration in the adoption of palletized loading is the difference in time consumed between loading and handling loose units and palletized unit loads. The following chart gives a very good idea of what is possible using the palletized method, and while it embraces many operations, the same savings in time and labor can be accomplished in proportion to the number of operations required.

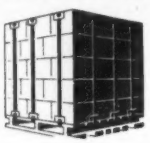
After studying the chart below, determination of the most practical method of palletizing and handling to fit individual conditions is essential. Obviously, in order

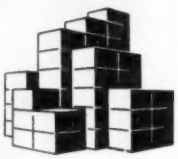


Loaded pallet being handled by truck.

* PALLETIZED UNIT LOADS vs LOOSE CARGO

THE FOLLOWING CHART COMPARES TWO CARGO HANDLING METHODS AT EACH OPERATION IN A TYPICAL SHIPMENT OF SUPPLIES FROM NAVY CONTRACTOR TO POINT OF USE. THE NUMBER OF MAN-HOURS REQUIRED TO HANDLE 100 TONS OF PALLETIZED CARGO (77 PALLET LOADS) IS COMPARED WITH THE NUMBER OF HOURS REQUIRED TO HANDLE THE SAME AMOUNT OF LOOSE CARGO (4080 SEPARATE PACKAGES). THE FIGURES USED ARE BASED ON TIME STUDIES CONDUCTED BY MATERIALS HANDLING OFFICERS IN THE UNITED STATES, GUAM, PEARL HARBOR AND TRINIDAD. IDEAL WORKING CONDITIONS ARE ASSUMED





= 15 MAN-HOURS

OPERATION	PALLETIZED	LOOSE CARGO
LOADING PALLET AT CONTRACTOR'S	15 MAN-HOURS	NO MAN-HOURS
STRAPPING PALLET AT CONTRACTOR'S	35 MAN-HOURS	NO MAN-HOURS
LOADING CAR AT CONTRACTOR'S	9 MAN-HOURS	50 MAN-HOURS
UNLOADING CAR AT SUPPLY DEPOT	9 MAN-HOURS	24 MAN-HOURS
STOWING AT SUPPLY DEPOT	9 MAN-HOURS	30 MAN-HOURS
ISSUING AT SUPPLY DEPOT	6 MAN-HOURS	30 MAN-HOURS
LOADING CAR AT SUPPLY DEPOT	8 MAN-HOURS	50 MAN-HOURS

OPERATION	PALLETIZED	LOOSE CARGO
UNLOADING CAR AT SHIPSIDE	9 MAN-HOURS	24 MAN-HOURS
LOADING AND STOWING ON SHIP	37 MAN-HOURS	47 MAN-HOURS
UNLOADING SHIP TO DOCK	24 MAN-HOURS	104 MAN-HOURS
LOADING TRUCK AT DOCK	8 MAN-HOURS	54 MAN-HOURS
UNLOADING TRUCK AT SUPPLY DUMP	9 MAN-HOURS	57 MAN-HOURS
STOWING AT SUPPLY DUMP	9 MAN-HOURS	39 MAN-HOURS
RELOADING AT SUPPLY DUMP	8 MAN-HOURS	55 MAN-HOURS
UNLOADING AT POINT OF USE	9 MAN-HOURS	58 MAN-HOURS

TOTAL NUMBER OF MAN-HOURS REQUIRED FOR MATERIALS HANDLING AT ALL OPERATIONS :-

PALLETIZED CARGO . 203 MAN-HOURS

LOOSE CARGO . 682 MAN-HOURS

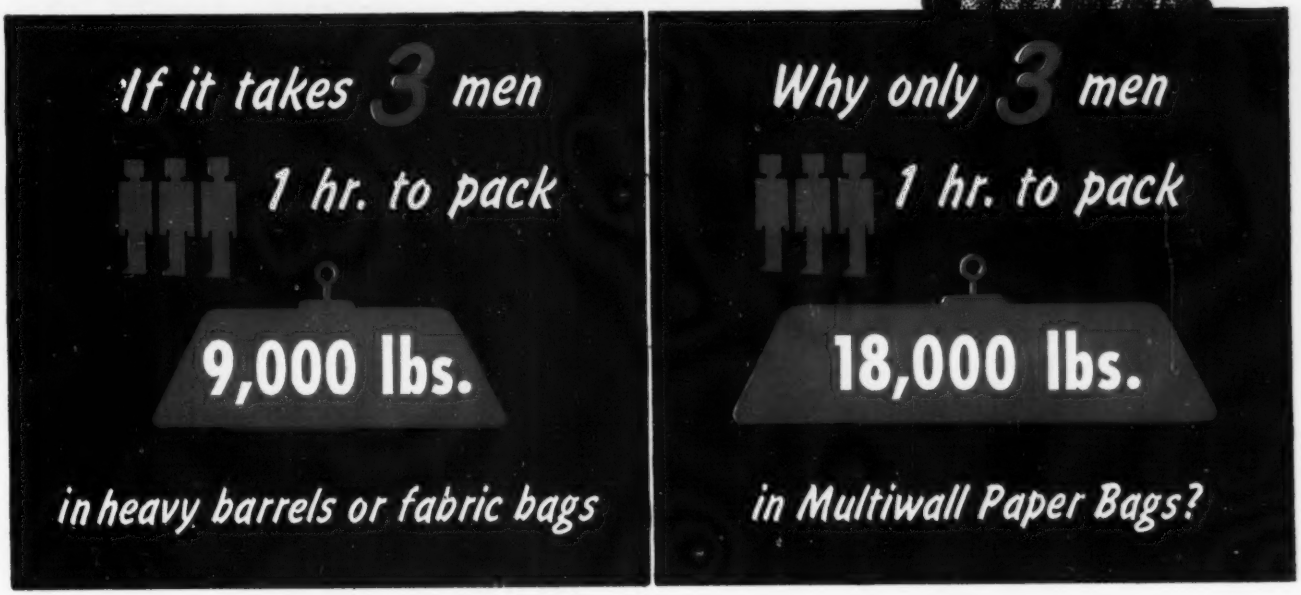
NET SAVING EFFECTED BY PALLETIZED UNIT LOADS . . . 682 - 203 = 479 MAN-HOURS

A Plus Value . . . PALLETIZATION GREATLY REDUCES PILFERAGE POTENTIAL AND DAMAGE TO INDIVIDUAL PACKAGES

*Reprinted from "The Monthly Newsletter of the Paymaster General"

A Simple Example of Multiwall Bag Economy





Greater packing speed is only one of the advantages of Multiwall Bags and Bag-filling Equipment.

Multiwall Bags actually improve working conditions. They are tight and siftproof. They are compact and easy to handle.

With Multiwall Paper Valve Bags, your product is accurately preweighed . . . before the bags are closed. And, the bags require no tedious shaking by hand to assure proper settlement.

Multiwalls are closed automatically by the internal pressure of their contents. There is no bother with troublesome lids or hand-sewing. By this method, a single man, operating two filling machines, can keep two other men busy checking and stacking the bags at the rate of 18,000 lbs. per hour.

Space-Saving Advantage

Five hundred empty 100-lb. Multiwall Paper Bags can be stored in approximately the same space as one 200-lb. barrel. Think what this means in saving valuable plant floor space.

In fact, Multiwalls mean economy and improved packaging all along the line. These bags will be specially made to fit your particular requirements. For full information, write your nearest St. Regis office today.

St. Regis MULTIWALL PAPER BAGS

MULTIPLY PROTECTION • MULTIPLY SALEABILITY

ST. REGIS PAPER COMPANY

TAGGART CORPORATION

NEW YORK 17: 230 Park Ave. CHICAGO 1: 230 No. Michigan Ave.
BALTIMORE 2: 2601 O'Sullivan Bldg. SAN FRANCISCO 4: 1 Montgomery St.

IN CANADA:
St. Regis Paper Co. (Can.) Ltd.
Montreal, Quebec
Vancouver, British Columbia

Birmingham Boston Cleveland Dallas Denver Detroit Franklin, Va.
Los Angeles Nazareth, Pa. New Orleans No. Kansas City, Mo. Seattle Toledo

to adopt the palletized method, one of the first requirements is to procure the necessary equipment, which, for purposes of this article, consist of fork and pallet trucks and pallets.

In order to show what can be accomplished with fork and pallet trucks, the picture on the previous page shows very clearly the ease with which pallets can be handled with automatic equipment. Each unit on the pallet ordinarily represents a separate handling operation; but, as can be seen, as many as twenty-five units are handled in one operation.

The illustration at the right shows how a pallet truck can be used in the handling of carboys. These carboys are stored on pallets, usually four to a pallet; and instead of moving each carboy as a separate unit, four can be moved at the same time.

By the construction of an inexpensive inclined ramp, as many as four carboys, placed on a pallet and handled by either a pallet truck or a fork truck, can be handled and loaded for transportation either to a customer or to other parts of a plant.

The common pallets for handling bags, boxes, carboys, barrels, drums and the like are generally constructed of wood; but in some cases, specially made steel pallets have been used. Also many manufacturers are producing steel-bound skids, which are generally used for handling palletized loads within a plant. On the next page are shown conventional pallets with



Carboys can be stacked readily on pallets for convenient handling. Four are usually stored on a pallet and the whole unit moved at once.

OLDBURY
ELECTRO-CHEMICAL
COMPANY

•

PHOSPHORUS TRICHLORIDE

•

PRODUCTION problems connected with Phosphorus Trichloride parallel very closely those of Phosphorus Oxychloride. Here again experience and continuous technical improvements enable us to produce a material remarkably free from impurities.

Shipping containers are returnable drums and tank cars.

•

Plant and Main Office:
NIAGARA FALLS, NEW YORK

New York Office:
22 EAST 40TH ST., NEW YORK 16, N.Y.

Ready to Serve—

Aqua Ammonia
Anhydrous Ammonia
Yellow Prussiate of Soda
Calcium Ferrocyanide
Calcium Chloride
Tri-Sodium Phosphate

•

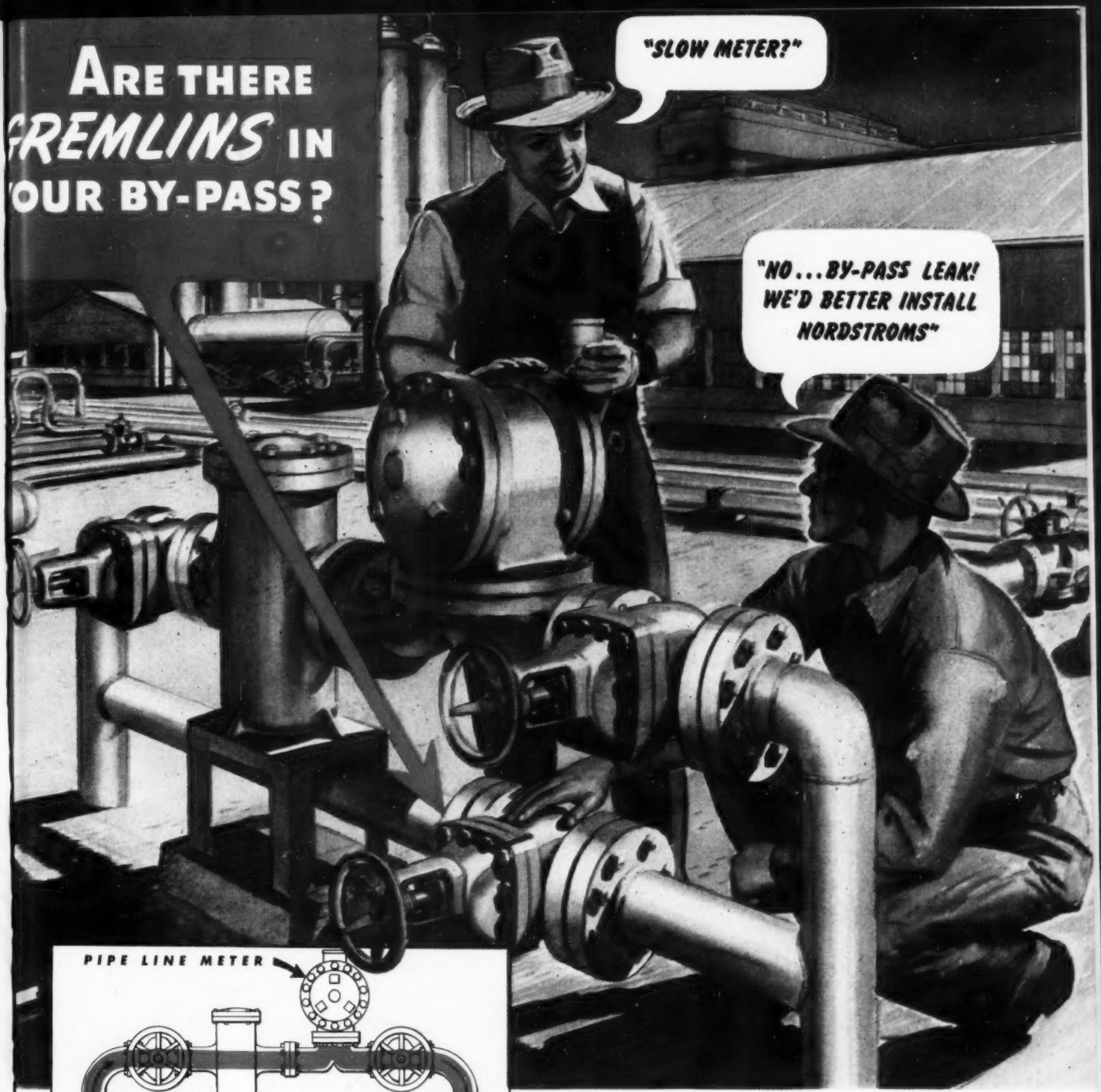
HENRY BOWER CHEMICAL
MANUFACTURING COMPANY
29th & GRAY'S FERRY ROAD PHILADELPHIA, PA.

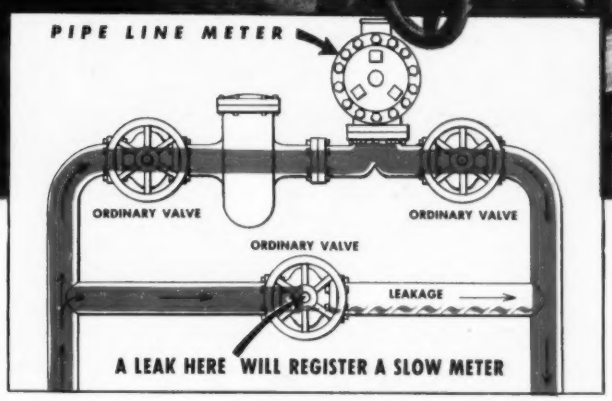
GUMS

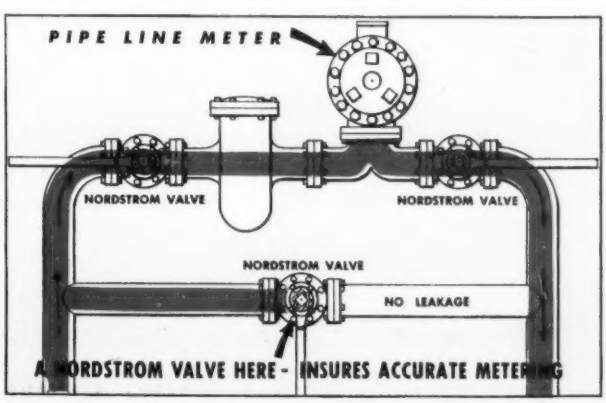
TRAGACANTH KARAYA ARABIC
QUINCE SEED NUTGALLS

D. S. DALLAL & CO.
261 FIFTH AVENUE, NEW YORK 16
IMPORT Direct Importers EXPORT
TELEPHONE MURRAY HILL 3-8646 - 8647 - 8648

ARE THERE *GREMLINS* IN YOUR BY-PASS?







LEAKY VALVES ON BY-PASSES CAUSE INACCURATE METERING

LEAKING gate valves on by-passes cause under-registration of the meter. This is especially true on pipe lines and at pipe line terminals using large oil meters. Losses can run as high as 5% to 10%. Unless the operator is aware of this leakage, the meter is usually blamed for inaccuracy. It isn't the meter's fault. A tight, leak-proof valve on the by-pass is absolutely necessary.

To assure complete satisfaction from any meter setting, use Nordstrom Valves on the by-pass. Not a drop of the line fluid (or gas) can pass a closed Nordstrom. If your meters are running slow, check your by-pass. *Change to Nordstroms.* Gas companies have learned by experience that Nordstrom Valves are essential on the by-pass. Many gas operators have made Nordstroms standard equipment for all meter settings.



NORDSTROM *Lubricated* **VALVES**

A valve principle, centuries-old, becomes indispensable in many plants

OLDEST of devices used by man for the control of fluids in closed conduits is the tapered plug valve. In the form of the common "stop-cock" it has been in general use since very early times, but only in the smaller sizes and for moderate services.

It was not until the advent of the Nordstrom pressure-lubrication principle (1916) that the plug valve became available for the full range of heavy-duty process and industrial uses. Since that time, this principle has been built into Nordstrom Valves of many sizes, styles and materials to meet the demands of practically every branch of the piping industry.

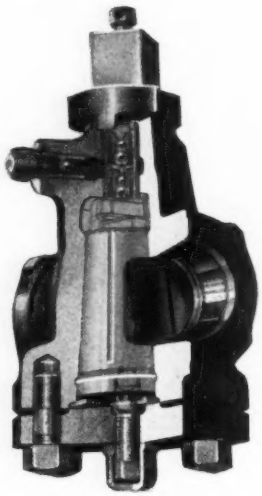
FUNCTIONS OF VALVE LUBRICATION

The functions of pressure lubrication in Nordstrom Valves are: (1) *Hydraulic action,* keeping the plug in free working condition; (2) *Maintenance of positive seal* against internal and external leakage; (3) *Free turning,* even of the largest sizes and against heavy differential pressure; (4) *Protection of working surfaces* from wear and corrosion. Thus, the Nordstrom principle of lubrication has made it possible to take full advantage of the inherent simplicity, compactness and positive rotary action of the tapered plug valves.



LUBRICATION IS VITAL

Lubrication of a tapered axle skein is necessary for easy rotation and long life of the metal contacting surfaces. Lubrication is even more important in a valve. For extra long life lubrication must be used.



Hypreseal Type

TAPERED PLUG

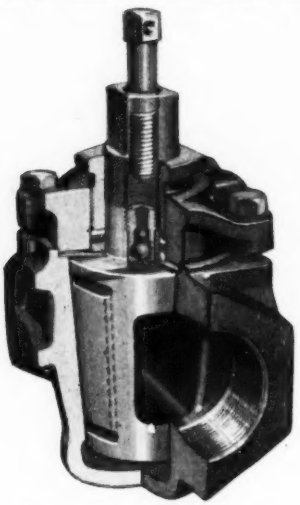
The tapered form of plug and seat provides an intimate fit, regardless of the thickness of lubricant film. Even with a complete absence of lubricant, the plug and body have a ground-joint, metal-to-metal contact. The positive rotary action of the tapered plug valve provides inherent protection of the seating surfaces against corrosion, erosion or accumulation of solids.

LUBRICANT "JACKING"

In all Nordstrom Valves, lubricant forced in under pressure produces a momentary lifting movement of the plug, which overcomes any adhesion and, because of the taper, creates a small space for a lubricant film between the plug and body.

RESILIENT SEATING

In every type of Nordstrom Valve, the arrangement which holds the plug in place has a small, but highly important, degree of resiliency. This prevents binding and allows the lubricant "jacking" action to function properly.



Regular Screwed Gland Type

"SEALDPORT"

In the Nordstrom patented *"Sealdport"* system, the grooves are divided between the body and plug in such manner that the exposed groove sections are disconnected from the lubricant supply before they are brought in contact with the line-fluid space. These grooves are automatically reconnected when the plug is brought to the fully open or closed position. Ports are completely surrounded by a lubricant film, preventing leakage past any part of the port boundary.

Nordstrom LUBRICATED VALVES

Sealdport Lubrication

MERCO NORDSTROM VALVE COMPANY — *A Subsidiary of Pittsburgh Equitable Meter Company*

Main Offices: 400 Lexington Avenue, Pittsburgh 8, Penna. • *Branches:* Atlanta, Boston, Brooklyn, Buffalo, Chicago, Columbia, Houston, Kansas City, Los Angeles, New York City, Oakland, San Francisco, Seattle, Tulsa • *Canadian Licensees:* Peacock Bros., Ltd., Montreal
European Licensees: Audley Engineering Co., Ltd., Newport, Shropshire, England • *South American Representative:* The Armco Int'l Corp. • *Main Office:* Middletown, O.
PRODUCTS: Nordstrom Lubricated Valves; Air, Curb and Meter Cocks • Nordco Valve Lubricants • EMCO Gas Meters • EMCO-McGaughy Integrators
EMCO Regulators • Pittsburgh-National Meters for Gasoline, Grease, Oil, Water and other Liquids • Stupakoff Bottom Hole Gauges



They got the idea from Crown Can

YES, it's true. From our very beginning we have gone in for personalized service in a big way. Being no chair-warmers, Crown officials spend much of their time in the field. They call on the trade regularly, helping Crown customers with their packaging problems, keeping them hep to the latest canning procedure. What with such service and the fact that we produce cans of highest quality, it is easy to see why we have come along so fast . . . If you'd like to get in on this good thing, just drop us a line.

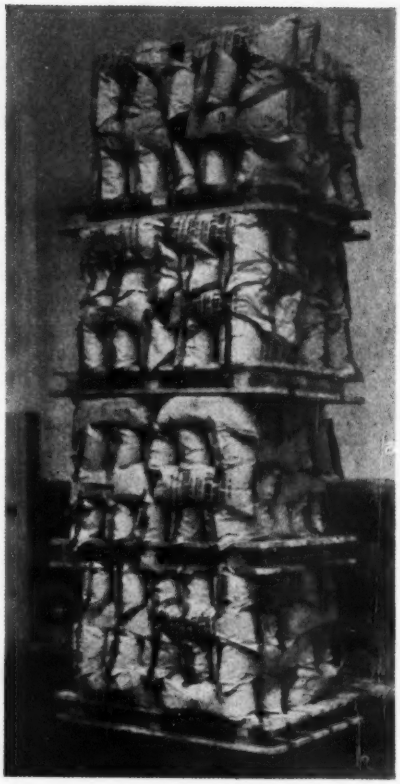
CROWN CAN

INDEPENDENT AND HELPFUL

a load and a steel-bound skid without a load.

The whole subject of palletizing and materials handling is a very live one, and definitely will pay large dividends wherever it is pursued and adopted. Because of the increased demand by the armed services for equipment necessary to load, ship, and handle the tremendous quantities of supplies, the impetus has been created among the equipment manufacturers; and while almost unbelievable accomplishments have been effected by the use of palletized handling, many more developments and improvements are most certain to come along. As pallet trucks and fork trucks become more readily available to industry, and as engineering develops inexpensive pallets which can economically accompany the unit load on a non-returnable basis, we shall see unit loading reach its peak of achievement and adaptability.





Conventional wooden pallets (above), showing how bags interlock. Steel bound pallets are shown at left.

Packaging Exposition Scheduled for April

The Packaging Exposition of 1946 will be held in the Pacific Auditorium, Atlantic City, N. J., April 2 to 5, inclusive, 1946, it is announced by the American Management Association, the sponsoring organization. This show will be the largest in the fifteen-year history of the exposition, according to the association's announcement, with some 150 leading manufacturers of equipment, machinery, supplies and services essential to the field of packaging, packing and shipping, participating.

Concurrently with the exposition, the American Management Association will hold a conference on packaging, packing and shipping, with outstanding authorities in the field addressing the technical sessions. An attendance of between 6,000 and 7,000 executives of package-using industries in the United States, Canada and Latin America is anticipated.

To facilitate the arrangement of hotel accommodations for the personnel of exhibiting companies as well as for visitors to the exposition, the association is planning to establish a special housing bureau. The address is 16 Central Pier, Atlantic City, New Jersey.

LUSTRA-PEARLS
BONE OR HIDE GLUE
ONE OF MANY CCI PRODUCTS

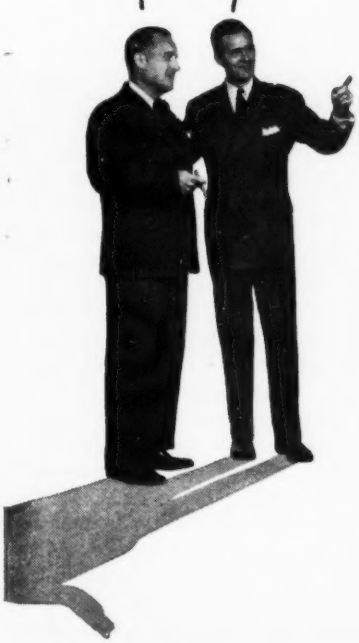
EASIER TO HANDLE
EASIER TO MEASURE
ABSORBS WATER READILY
FILTERED FOR PURITY
FREE FROM FOREIGN MATTER
CLEAR IN SOLUTION

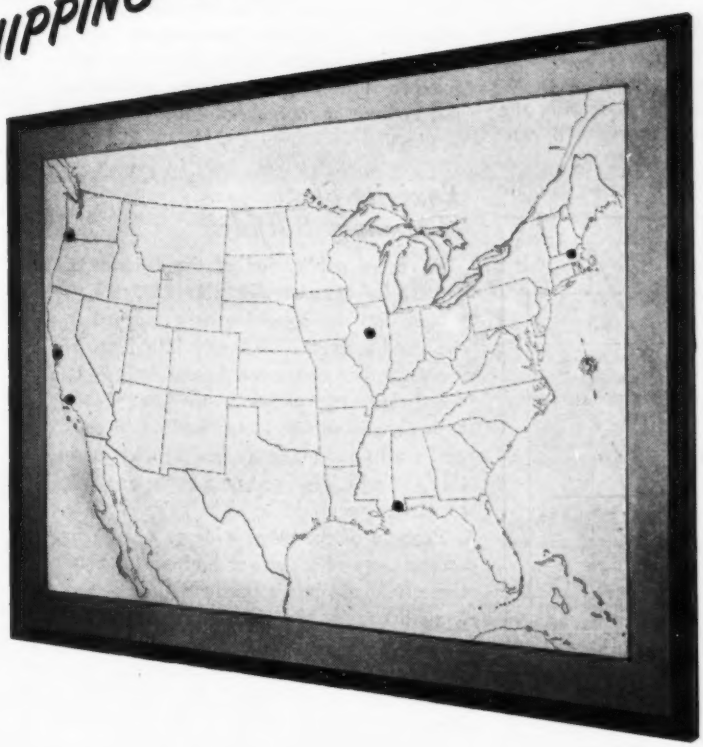
LUSTRA-PEARLS
The modern way to use glue

CONSOLIDATED CHEMICAL INDUSTRIES INC.
Sales Offices: HOUSTON • SAN FRANCISCO • NEW YORK
Plants: San Francisco, Cal.; Woburn, Mass.; Little Rock, Ark.; Bastrop, Baton Rouge, La.; Fort Worth, Houston, Tex.; Buenos Aires, Argentina.
We Solicit Your Inquiries

"Just look at the locations of those six Bemis Multiwall plants!"

"Yes, that's another reason IT PAYS TO BE A BEMIS MULTIWALL PAPER SHIPPING SACK CUSTOMER!"





The strategic locations of the six Bemis Multiwall plants mean quick service to all sections of the country. • And that's not all . . . working as a team, these plants support each other in filling the needs of Bemis customers. In emergencies, the plant with which an order is placed can depend on five other Bemis plants for assistance in meeting scheduled shipping dates. Such advantages are why folks say: • "It pays to be a Bemis Multiwall Paper Shipping Sack Customer."

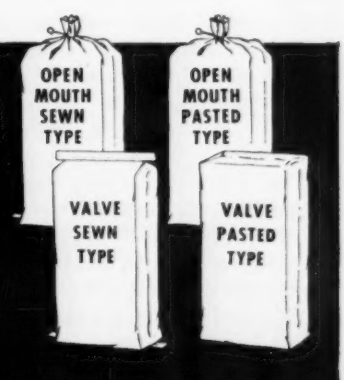
Bemis Multiwall Paper Shipping Sacks

6 PLANTS

Peoria, Ill. · East Pepperell, Mass. · Mobile, Ala. · San Francisco, Calif. · Wilmington, Calif. · St. Helens, Ore.

BEMIS BRO. BAG CO.

OFFICES: Baltimore · Boston · Brooklyn · Buffalo · Charlotte · Chicago · Denver · Detroit · East Pepperell · Houston · Indianapolis · Kansas City · Los Angeles · Louisville · Memphis · Minneapolis · Mobile · New Orleans · New York City · Norfolk · Oklahoma City · Omaha · Orlando · Peoria · St. Helens, Ore. · St. Louis · Salina · Salt Lake City · San Francisco · Seattle · Wichita · Wilmington, Calif.

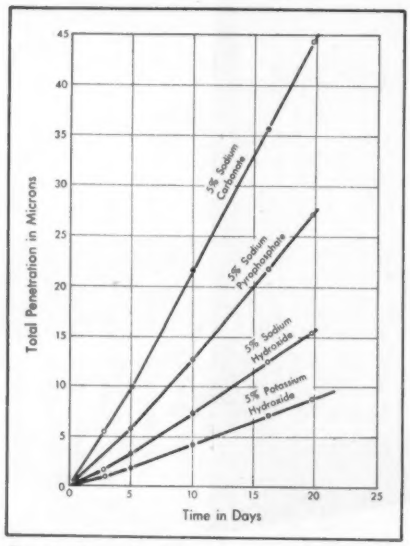


PLANT OPERATIONS NOTEBOOK

Corrosion Resistance of Glass

It is generally known that glass is highly resistant to the common inorganic acids excepting, of course, hydrofluoric. The actual rate of penetration by the common inorganic acids would be perhaps 1/16 inch in 100 years, or 15 microns per year if held at 150°F. The attack of the more corrosive alkaline solutions is somewhat faster at this temperature, ranging up to about 850 microns or 0.85 mm. per year for 5 per cent sodium carbonate, and higher at higher temperatures and concentrations.

Pertinent data on the corrosion of plate



Penetration of plate glass by alkaline solutions at 150° F.

glass by alkaline solutions was recently prsented by M. S. Tarnopol and A. E. Junge of the Pittsburgh Plate Glass Co. They have concluded from careful tests, that plate glass can adquately withstand most alkaline solutions up to 150° F. and some alkaline solutions at much higher temperatures, where staining is not an important factor. Their investigation showed also that scale had little effect on corrosion rates and that apperance gives no indication of the amount of corrosion.

Test specimens were cut from plate glass manufactured by the continuous flow tank process. Their approximate composition is 72% SiO_2, 14% Na_2O, 11.5% CaO, and 2.5% MgO. They were immersed in solutions of sodium carbonate, sodium pyrophosphate, sodlum hydroxide, potassium carbonate, and potassium hydroxide, and results obtained by determining loss of weight at 5-day intervals up to twenty days.

At 150°F., concentrations of 5% alkaline solutions produced maximum rates of penetration. At 180°F., however, the rate of penetration by sodium carbonate reached a maximum of about 3.4 mm. per year at a concentration of 11 to 12 per cent. Increasing the concentration above 10% did not alter penetration rates appreciably. In general, the rate of reaction appeared to approximate the old rule of doubling for each 18°F. increase in temperature. Potassium compounds acted slower than sodium salts, and sodium hydroxide slower than sodium carbonate and sodium pyrophosphate for this type of glass.

Toxicity of Hydrogen Sulfide

A recent publication of the Bureau of Mines, Information Circular 7329, "Hydrogen Sulfide Poisoning as a Hazard in the Production of Oil," calls attention to the fact that carelessness and failure to take proper precautions to avoid exposure to hydrogen sulfide have resulted in several deaths and many serious injuries from this gas, which is five to six times as toxic as carbon monoxide.

Because of the more widespread use in recent years of "sour" or high-sulfur content crude oils in the production of petroleum products, the chances for exposure to hydrogen sulfide poisoning have increased greatly in the oil industry, the publication states. Also, this hazard is found in more than 50 other occupations.

Hydrogen sulfide, a colorless, inflammable gas having an offensive odor, exerts a marked irritant action upon the cornea of the eye even in low concentrations, and in larger concentrations causes asphyxia and even death. The Bureau publication describes the physiological action of the gas, treatment for hydrogen sulfide poisoning, preventive measures, and detection of the gas in air and also contains an extensive bibliography of articles of general interest on the subject.

Checking Centrifugal Pumps

Valuable tips on making a reconversion inventory on centrifugal pumps are contained in a bulletin recently issued by the Allis-Chalmers Mfg. Company. An outline of the comprehensive checking procedure included in the bulletin should be of interest to plant operating supervision.

Pump condition can be checked and judged to fit into one of seven categories: (1) O. K. as is, (2) needs new parts, (3) will shortly require replacement, (4) needs immediate replacement, (5) needs reapplication, (6) is obsolete, (7) may have parts of second or third choices that were determined by war shortages.

Pump examination starts off with a study of pump history. Master maintenance records and reports by mechanics and foremen form the basis for study. Pumps are best checked while in operation. Pumping capacity, efficiency, and head are first examined. Amount of liquid flow, power consumption and net head measured in feet are basis for checking against the data-plate ratings. Checks made to see whether the suction plate has increased, and whether the foot valve or screening is clogged. Alignment of motor and pump shafts and bearing temperatures are examined next. Final check determines the rate of leakage at stuffing boxes, and whether the pump makes excessive vibration or noise.

The third step requires dissembling the pump for detailed inspection. Wearing rings and close-clearance bushings are examined first. Then, the impeller is checked for wear, which may result from abrasion, corrosion, or cavitation through grit, chemical action, or localized pitting. Present density is checked against original thickness, and if the impellor is worn to half of original thickness, replacement is necessary. Next, the casing is inspected, and wear may be similar to that on the impellor. Here, too, thickness should be checked against original size, and replacement made before wear reached half-way mark.

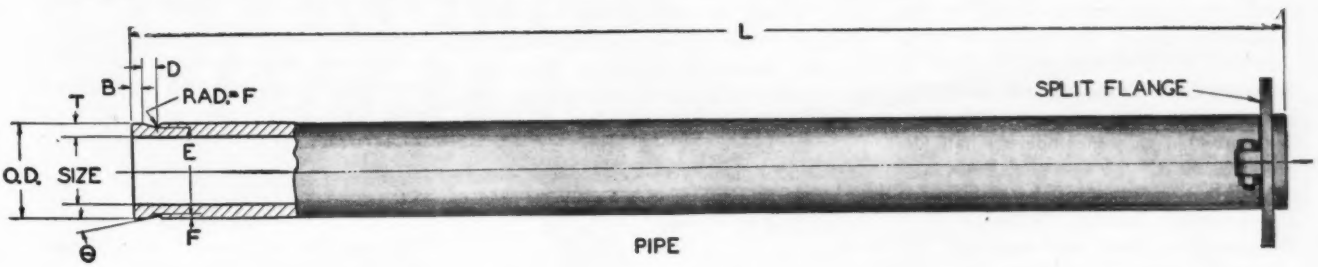
In checking bearing clearance for wear, it will be necessary to remove all old grease and dirt particles. Overworn bearings should be replaced in the process, and the proper lubricant injected. Sleeves are then inspected for scoring or wear. This may result from entrance of grit, from aged or hard packing, from packing pulled too tight, or as a result of packing insufficiently lubricated. Scored sleeves should either be replaced or turned down.

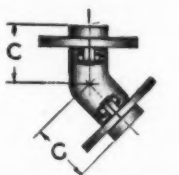
Checks are made on water seal piping and oil rings. In case no leakage shows up at the glands, and if the packing and lantern ring check—lantern ring must align with water seal piping outlet—then the trouble is probably caused by clogged piping. In the same way, grime-filled oil grooves may cause oil rings to stick and heat. A study of the completed check list will expose pump weaknesses.

Cost of Boiler Scale

There is a rule of thumb relating to the cost of scale which goes something like this: Multiply the number of pounds of scale removed from the boiler per month by the cost of your coal per ton. Divide the product by 7. The quotient is the annual cost in dollars of the scale due to fuel loss. Therefore if 400 lbs. of scale are removed per month and if the cost of the coal is $8 per ton the annual loss amounts to $457.

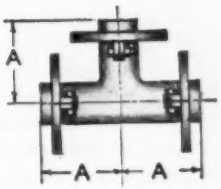
HAVEG *piping...valves...fittings will help you solve your chemical piping problems...because HAVEG defies corrosion*





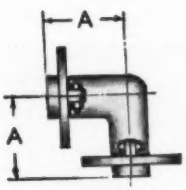
MADE IN LONG LENGTHS

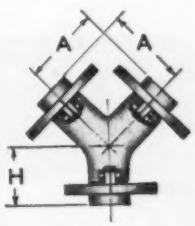
HAVEG Chemical Pipe lines are quickly installed with a minimum number of joints. In standard sizes 1" to and including 12" HAVEG piping is furnished **in ten foot lengths.** Joints are easily handled since connections are of a simple split flange design which is quickly assembled and assures a positive leak proof joint.



A TOUGH *non-brittle* PLASTIC

HAVEG chemical piping is made of asbestos fibres bonded together with a synthetic resin under heat and pressure. HAVEG piping is strong, tough and resilient. It requires no special handling as it is not brittle. It is chemical resistant THROUGHOUT ITS ENTIRE MASS, therefore surface scratches or even deep gouges do not impair its chemical resistance. Should cracks or breaks occur, they are readily mended, on the job, with HAVEG repairing cement. HAVEG piping is unaffected by rapid temperature changes and can be used continuously at temperatures as high as 265° F (130° C).

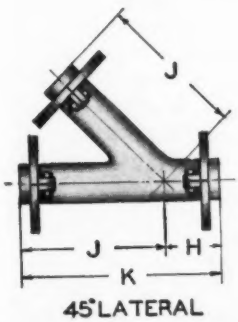




READILY CUT AND FITTED *"on the job"*

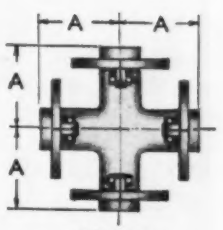
HAVEG piping is supplied in standard 10 foot lengths complete with connections, expansion joints, fittings and valves where chemical pipe lines can be blueprinted before installation. Where lines cannot be planned in advance, or where for some other reason it is desirable to erect lines as installation of tanks, towers and other equipment proceeds, HAVEG piping is readily cut and fitted "on the job". HAVEG is readily cut by using a band, circular or hack saw. It is conveniently machined about the same as brass, using high speed and slow feed. It may be machined dry, not requiring lubricants or water.

HAVEG bulletin F-4 gives complete data on how to specify, erect and service HAVEG piping.

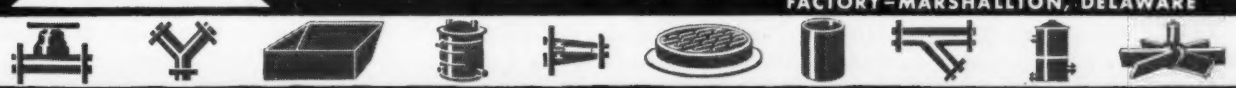


Send FOR TECHNICAL BULLETIN

HAVEG chemical piping is made in standard sizes ½" to and including 12". The illustrations shown here are from the piping section of Bulletin F-4 which gives complete engineering data on HAVEG pipe, valves, fittings, pumps and other accessories. You can design complete installations from this data. Send today for Bulletin F-4.



HAVEG CORPORATION NEWARK 72, DELAWARE
FACTORY–MARSHALLTON, DELAWARE



CLEVELAND 14 550 Leader Building · CHICAGO 11 1201 Palmolive Building · DETROIT 11 2832 E. Grand Blvd. · LOS ANGELES 13 601 W. Fifth St.

LABORATORY NOTEBOOK

Calorimeter For Volatile Liquids

After a search through the publications of heat capacity data for volatile liquids and solutions, Northwestern University reports that data at temperatures where the fluid has an appreciable vapor pressure are not available. This is understandable when it is realized that relatively large vaporization losses in such calorimetry make impossible, or considerably detract from, the accuracy of measurements. Ordinarily the latent heat losses due to evaporation are calculated and corrected to some indeterminate degree.

In the present work at the University's Technological Institute with SO_3H_2O mixtures or sulfuric acid solutions, this problem is neatly avoided by using a bellows type of platinum calorimeter. These solutions, as most others, have a greater cubical thermal expansion than the metal. Thus, by completely filling the calorimeter at room temperature, the pressure within is only moderately increased with a rise in temperature because of the easy expansion of the convoluted sections. The calorimeter is made adiabatic by surrounding it by a high vacuum (10^{-4} mm. Hg.) space and an isothermal bath. Thermal equilibrium is attained within the calorimeter by a good distribution of perforated platinum foil. The pressure within the calorimeter can be so maintained that it is above the vapor pressure (bubble point) of the fluid, and hence, no vaporization occurs. Stainless steel bellows that can withstand pressures up to 600 p.s.i. are commercially available for use with less corrosive solutions.

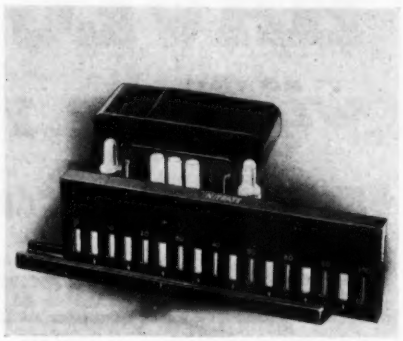
Now the process does not occur either at constant volume nor pressure. However, it may be shown from a thermodynamic consideration that the change of Cp with pressure is negligible. Knowing the density-temperature relations of the solution, the change is readily calculated from an easily derived relationship.

Platinum bellowed calorimeters may be made to specifications.—V. C. Williams and M. Sivetz.

Nitrate Comparator

W. H. & L. D. Betz, Philadelphia 24, Pa., and W. A. Taylor & Co., Baltimore 4, Md., have jointly developed a simple accurate test for the nitrate ion in boiler water. The test procedure was established in the laboratory of W. H. & L. D. Betz and the equipment designed by W. A. Taylor & Co.

The Taylor-Betz Nitrate Comparator finds particular application in routine plant control of the nitrate-hydroxide ratio in boiler waters for the prevention of embrittlement. The equipment consists of a comparator base and slide covering the range of 0 to 100 p.p.m. nitrate in nine



gradations. An initial supply of reagents is furnished with the comparator. The accuracy of the method is not affected by ions normally present in boiler water.

Ultra-Micro Balance For Plutonium Study

During the early stages of plutonium research, quantities of materials were limited to micrograms. Accurate weighing was of paramount importance, and in order to achieve an accuracy of 3 per cent in weighing these infinitesimal amounts, an ultra-micro balance of an extremely high sensitivity was designed and built by Drs. P. L. Kirk and R. D. Craig of the University of California. This balance could actually weigh amounts as small as a microgram with an accuracy of 3 per cent and could actually weigh a mass as small as 0.03 micrograms.

The material to be weighed could be placed in containers weighing as much as twenty milligrams—that is, 20,000 micrograms.

The beam and other operating parts of this balance are constructed of fibers of pure quartz ranging in diameter from about four times that of a human hair down to fibers that are invisible to the unaided eye. The beam of the balance is a quartz fiber framework some four inches in length, which is suspended inside a brass housing on a horizontal fiber at right angles to the plane of the beam.

From each end of the beam there depends a fiber, to which is attached a quartz frame that holds a weighing pan of thin platinum foil. Objects to be weighed are placed on the foil.

The addition of a weight to one side of the balance causes the beam to be depressed on that side. The beam is restored to its initial position by twisting in the opposite direction on the fiber that supports it. It is the amount of twisting necessary to return the beam to its initial position, after the addition of a weight, that is measured and used to evaluate the weight added.

The movement of the beam is magnified by a suitable optical arrangement, and during a weighing all parts of the balance are protected against air currents.



An unusual time-saving device at Hercules Powder Company's Experiment Station facilitates the handling of the 15,000 corks used yearly by the Station. It is a cork chart which consists of a wooden board on which is glued all sizes of corks marked with their size designations.

Cowles DETERGENT SILICATES

DRYMET* (Sodium Metasilicate—Anhydrous)
GRANULAR OR FINES

CRYSTAMET* (Sodium Metasilicate—Pentahydrate)
REGULAR GRIND

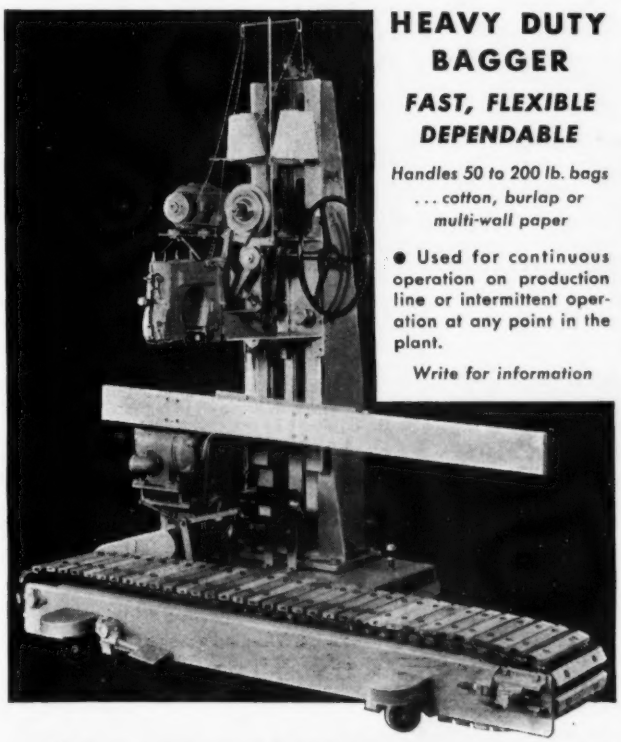
DRYORTH* (Sodium Orthosilicate—Technically Anhydrous)
REGULAR GRIND DUSTLESS

DRYSEQ* (Sodium Sesquisilicate—Technically Anhydrous Equivalent)
REGULAR GRIND DUSTLESS

* Reg. U. S. Pat. Off.

THE COWLES DETERGENT CO.
7016 EUCLID AVENUE • CLEVELAND 3, OHIO

The CONSOLIDATED Model 105



HEAVY DUTY BAGGER

FAST, FLEXIBLE DEPENDABLE

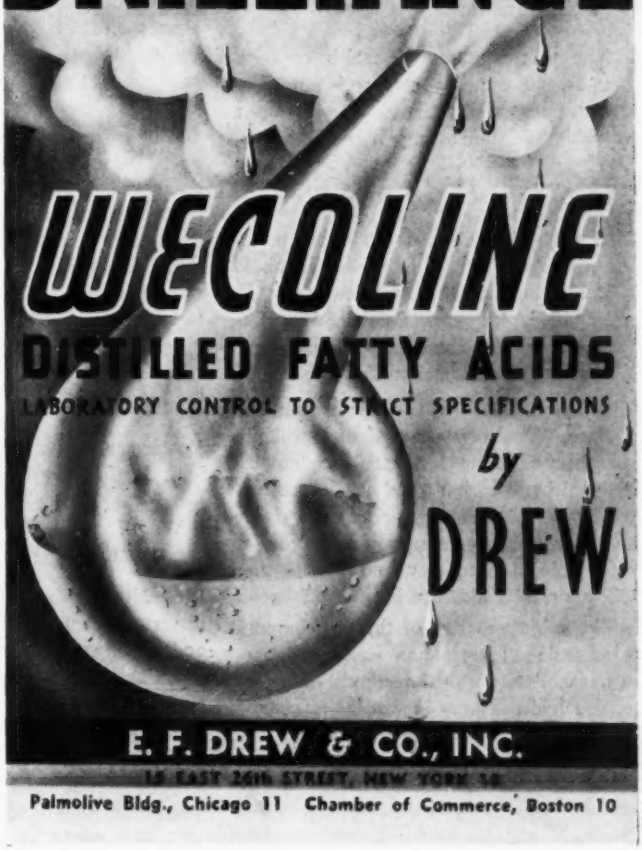
Handles 50 to 200 lb. bags . . . cotton, burlap or multi-wall paper

● Used for continuous operation on production line or intermittent operation at any point in the plant.

Write for information

CONSOLIDATED PACKAGING MACHINERY CORP.
BUFFALO 13, N.Y.

BRILLIANCE



WECOLINE

DISTILLED FATTY ACIDS
LABORATORY CONTROL TO STRICT SPECIFICATIONS
by
DREW

E. F. DREW & CO., INC.
Palmolive Bldg., Chicago 11 Chamber of Commerce, Boston 10

INDUSTRY'S BOOKSHELF

Organic Characterization

THE CHARACTERIZATION OF ORGANIC COMPOUNDS, *by Samuel M. McElvain.* The Macmillan Company, N. Y., 1945. 282 pp. Price $3.40. Reviewed by Ed. F. Degering, Purdue University.

"The subject matter of this text has evolved" from the teaching during the past twenty-two years by Professor McElvain of the characterization of organic compounds at both the undergraduate and the graduate level. The author aimed to make this text sufficiently simple for the undergraduate student in organic chemistry and yet sufficiently complete for graduate instruction.

The titles of the respective chapters and pages devoted to each are: (I) outline of a procedure for the characterization of organic compounds, 4 pp., (II) Part A, determination of physical constants, 33 pp.: Part B, qualitative analysis for nitrogen, sulfur, and halogen, 6 pp., (III) the solubilities of organic compounds, 37 pp., (IV) the class reactions, 48 pp., (V) laboratory experiments with the class reactions, 26 pp., (VI) separations of mixtures of organic compounds, 23 pp., (VII) the selection and preparation of derivatives, 83 pp., Appendix A, list of experiments, 3 pp., Appendix B, list of compounds and reagents required for expenments, 3 pp., Index, 15 pp.

The text contains 45 tables of compounds, 60 experiments, and numerous illustrations and charts. It will be a valuable addition to any library.

Petroleum Constituents

THE CHEMICAL CONSTITUENTS OF PETROLEUM, *by A. N. Sachanen.* Reinhold Publishing Corporation, New York, N. Y., 1945, 451 pp. Price $8.50. Reviewed by Norman D. Coggeshall, Gulf Research Development Co.

The author of this book states in the preface, "The ultimate goal of petroleum chemistry is to resolve petroleum into individual hydrocarbons and other constituents." The book comprises ten large and thorough chapters on various phases of petroleum chemistry and is one that will materially aid in achieving this goal.

The subject matter of the ten chapters is as follows: petroleum gases and natural gasoline, physical methods of determining hydrocarbons in distillates, chemical methods of determining hydrocarbons in distillates, hydrocarbons of straight run distillates, hydrocarbons of synthetic distillates, petroleum wax, oxygen compounds, sulfur and nitrogen compounds, resins and asphaltic products and classification of crude oils. As may be seen from this list of subjects, the total scope of the book is very broad. Each chapter is rather complete within itself. In the chapters on analytical methods a discussion is given of each of the important analytical techniques such as: sulfonation of aromatic hydrocarbons, bromine and iodine numbers, azeotropic distillation, separation of waxes by crystallization, and many others. In the section on distillation there is for example a discussion of theoretical plates and of column packings as well as of specific applications.

In the chapters dealing with gasolines from different types of distillates there are extensive tables that give information, such as per cent aromatics, per cent naphthenes, specific gravity, etc. for the different fractions for oils from many different sources. In the chapters on oxygen, sulfur, and nitrogen compounds a discussion is given not only of the individual compounds found or formed but also of the analytical methods used for such studies and of various methods of separation.

The book is well written and in a style that holds the attention. Each topic, though not dealt with thoroughly enough that the book can serve as a handbook, is discussed in such detail that one can get a great deal of essential information. In the discussions credit is fully given to the many investigators quoted and the references are conveniently compiled at the end of each chapter. Although some experts in various phases may object to the manner in which their own specialties were treated, such is hardly avoidable in a book of this scope. Covering such a broad field with the thoroughness it does, this book is certain to be of great value to those engaged in the petroleum industry.

Sanitary Chemicals

DISINFECTION AND STERILIZATION, *by E. C. McCulloch.* Lea and Febiger, Philadelphia, 1945. 472 pages. Reviewed by W. F. Huppke, West Disinfecting Company.

Mr. McCulloch has given a scholarly dissertation on the subject of disinfection and sterilization. The subject matter is well presented, thoroughly coordinated and the bibliography is, for the most part, quite comprehensive although not always up to date.

The comprehensive discussion of all phases of disinfection includes chapters on the natural agencies which control microbial populations and the germicidal properties of the body, its fluids and secretions. About seventy pages are devoted to sterilization by means of heat in hospitals, food industries and laundries.

A chapter is devoted to the effects of cold and desiccation, and another to the effects of physical agents such as electricity and agitation. Methods of evaluating disinfectants are given at length and the dynamics of disinfection are discussed.

The effects of various germicidal compounds are discussed in seven chapters. Other chapters are devoted to water purification, sewage treatment, the disinfection of air and the selection of a disinfectant.

The most obvious criticism of the book is the lack of an up to date discussion of the vast amount of data on the new synthetic wetting agents and germicides, such as the quaternary ammonium complexes. These new detergents and germicides have become of major importance in the industry in the last few years, and a chapter or two should have been devoted to these substances rather than mere mention on four pages.

Other Publications

A LIST OF SUBJECT HEADINGS FOR CHEMISTRY LIBRARIES has been announced by the Special Libraries Association. It was compiled by a committee of the Chemistry Section, Science-Technology Group of Special Libraries Association, under the chairmanship of Grace R. Cameron, Librarian, Chemistry Library, Louisiana State University. The list is designed for use in assigning subject headings to the entries in a catalog of books, pamphlets and other literature. It is planographed and consists of 64 pages. Address Special Libraries Association, 31 East Tenth St., New York 3, N. Y. Price $1.50.

THE SOCIAL IMPACT OF SCIENCE is the title of a select bibliography which has been prepared by the Library of Congress under the Subcommittee on War Mobilization of the Senate Military Affairs Committee. It lists more than 500 titles of books, pamphlets, articles and congressional bills and reports dealing with the social and economic problems arising from scientific progress. A special section covers the available literature on atomic power, including several volumes yet in press. The period covered in this list is roughly that from 1930 to 1945.

TECHNICAL DATA ON PLASTICS. The purpose of this book is to acquaint its user with the nature, particular merits and utility of various plastics and with property values, as measured by recognized methods, commonly to be expected in available forms and modifications of the various basic compositions. The materials are treated individually. Brief, explanatory forewords are followed by tables and charts of more detailed data. Copies may be secured from the Plastics Materials Manufacturers' Association, Tower Building, 14th and K Streets, N. W., Washington, D. C., at $1.50 per copy.

POSTWAR FISCAL REQUIREMENTS, FEDERAL, STATE, AND LOCAL by Lewis H. Kimmel and Associates. This is the sixth in an integrated series of studies pertaining to postwar readjustment and reconstruction. It is an attempt to estimate the probable level of governmental expenditures for the first reasonably settled postwar year—which is assumed to be 1949. Published by the Brookings Institution, Washington 6, D. C. Price $2.00.

1945 PACKAGING CATALOG includes several new features; a section on decorative packaging emphasizing new trends, and the first section of the volume, which offer articles on design, war developments, research, and a symposium entitled "What's Ahead In Materials." Also new is the Package Planning division for aid in designing new and reconverted containers. This edition contains almost 33⅓% more pages than the 1944 book. For copies address 1945 Packaging Catalog, 122 East 42nd St., New York 17, N. Y. Price $4.00.



GUMS:

GUM ARABIC
GUM ARABIC BLEACHED
GUM GHATTI
GUM KARAYA (Indian)
GUM TRAGACANTH
GUM EGYPTIAN
GUM LOCUST (Carob Flour)
QUINCE SEED
★
CASEIN

GUMS
(CRUDE, POWDERED)
Chemicals and Oils

REPRESENTATIVES:
CHICAGO: CLARENCE MORGAN, INC.
BOSTON: P. A. HOUGHTON, INC.
PHILADELPHIA: R. PELTZ & CO.
ST. LOUIS: H. A. BAUMSTARK & CO.

SPECIALTIES:

MENTHOL (Crystals)
★
TARTARIC ACID
★
CREAM OF TARTAR

EGG ALBUMEN
EGG YOLK
BLOOD ALBUMEN
JAPAN WAX
CANDELILLA WAX

PAUL A. DUNKEL & CO., *Inc.*,
1 WALL STREET
NEW YORK 5, N.Y.
Hanover 2-3750

IMPORTERS AND EXPORTERS

CHICAGO: 919 N. MICHIGAN AVE., TEL. SUP. 2462

SUNSHINE STATE POTASH
A PRODUCT OF NEW MEXICO U.S.A.
REG. U.S. PAT. OFF.

MURIATE OF POTASH
62/63% K_2O ALSO 50% K_2O
•
MANURE SALTS
22% K_2O MINIMUM

UNITED STATES POTASH COMPANY
Incorporated
30 Rockefeller Plaza, New York, N.Y.

Producers of

SULPHUR

Large stocks carried at all times, permitting prompt shipments . . . Uniformly high purity of 99½% or better . . . Free of arsenic, selenium and tellurium.

TEXAS GULF SULPHUR CO.
Inc.
75 E. 45th Street New York 17, N.Y.
Mine: Newgulf, Texas

BOOKLETS & CATALOGS

Chemicals

A865. CHEMICALS. A new 48-page price list and catalog has been issued by the Magnus, Mabee and Reynard, Inc., describing their line of essential oils, balsams, aromatic chemicals, oleoresins, certified colors, flavoring materials and perfume bases.

A866. CHEMICALS. A wholesale price list of fine chemicals is available from Mann Fine Chemicals, Inc.

A867. CHEMICAL PROCESS. Alumox chemical process for producing corrosion resisting coating on aluminum alloys is described in a new 4-page brochure of The Enthone Co.

A868. CHROMATE INHIBITOR. A 16-page technical bulletin, "Chromate Corrosion Inhibitors for Internal Combustion Engines," has been issued by the Mutual Chemical Company of America.

A869. DETERGENTS. A new 22-page manual for laundry operators "Better Washing with Quadrafos" has been issued by the Rumford Chemical Works as Bulletin No. 120.

A870. GERMICIDAL DETERGENT. An 8-page pamphlet, "Onyxide," describes the properties and uses of the products of the Onyx Oil and Chemical Co.

A871. INHIBITOR. Texine Acid Inhibitor, an 8-page booklet of Consolidated Chemical Industries, Inc., describes the properties of "Texine" inhibitor for concentrated muriatic acid solutions.

A872. METAL HYDRIDES. "Hydride Process and Its Products" is a new 20-page booklet of Metal Hydrides, Inc., describing the production, properties and uses of hydrides, of titanium, zirconium and of certain special alloys and metal powders.

A873. MINERAL RESOURCES. The St. Louis-San Francisco Railway has issued 4 20-page booklets, each dealing with the mineral resources of the states Arkansas, Kansas, Missouri and Oklahoma.

A874. PLASTICS. "The Plastics Industry," a new 14-page booklet by the Plastics Material Manufacturers' Association, describes the divisions of the industry and its problems with special emphasis on employee training.

A875. PLASTICS. A new 44-page catalog, "The Watertown Book of Plastics," describes the products of the Watertown Manufacturing Co.

A876. PLASTICS. American Cyanamid Co. has announced the first issue of "Plastics Newsfront," an external house magazine, dealing with the applications of molding compounds, resin adhesives, and laminating resins.

Equipment—Methods

F517. BRAZING. A new 16-page booklet "How to Cash in on the Silver Ring" describes the "Silbraz Joint" for pipe fittings and valves based on the use of an inserted silver brazing alloy ring. This booklet, No. ADG2017, is published by the Air Reduction Sales Co.

F518. CHAIN. Chain Belt Bulletin No. 45-1 from Baldwin-Duckworth Division, of The Chain Belt Company, is an 8-page folder describing the features and prices of their line of chain belts.

F-519. COMMUNICATING SYSTEM. A 4-page pamphlet entitled "Temporator" (Bull. No. 119), describes the electro-mechanical plant intercommunication system of the Simplex Time Recorder Co.

F520. DEMINERALIZER. The Cochrane Corporation exchange demineralizers are described in a new bulletin No. 4181, entitled "Cochrane Demineralizers."

F521. DIESEL ENGINE OVERHAUL. "How Surface Chemistry Can Speed Up and Simplify Diesel Engine Overhaul" is a new 8-page pamphlet offered by Turco Products Corp., as Bulletin No. A352.

F522. EQUIPMENT. A new 16-page catalog entitled "Equipment for Chemical and Process Plants" describes compressors, vacuum pumps, blowers, pumps and refrigeration equipment of the Ingersoll-Rand Co.

F523. EQUIPMENT. The Aluminum Company of America has issued a 16-page mimeograph list of surplus equipment available for sale at their various plants.

F524. EXTRUSION. A revised and enlarged edition of the booklet "Tenite Extrusion" has been issued by the Tennessee Eastman Corp.

F525. FILTER MEDIUM. A new 32-page catalog, "Filtros, the Porous Mineral Medium," describes the properties and uses of the products of Filtros, Inc.

F526. FITTING. Bonney Forge and Tool Works has announced Bulletin WT-45, a new 16-page catalog describing their "Weldolet Fittings" and giving complete application procedures, structural data, specifications and prices.

F527. FLEXIBLE METAL HOSE. An 8-page bulletin (No. 55-G) describing the use of "Flex-Metal" hose for the handling of tank car shipments of liquids and gases, has been released by the Pennsylvania Flexible Metallic Tubing Co.

F528. GASKETS. "Gruv-Seal Forged Iron and Alloy Ring Gaskets" is the title of a new booklet (Bulletin No. 45) describing forged metal gaskets of the Steel Improvement and Forge Co.

F529. KETTLES. Bulletin 72-T is a new 20-page catalog describing the line of electrically heated kettles of the Harold E. Trent Co.

F530. LABORATORY APPARATUS. A 4-page leaflet (23-TK) describing a line of laboratory furnaces and hot plates, and giving prices has been issued by the Harold E. Trent Co.

CHEMICAL INDUSTRIES TECHNICAL DATA SERVICE

Chemical Industries, 522 Fifth Ave., New York 18, N. Y. (12-5)

I would like to receive the following free booklets and catalogues.

A865	A872	F519	F526	F533	F540
A866	A873	F520	F527	F534	F541
A867	A874	F521	F528	F535	F542
A868	A875	F522	F529	F536	F543
A869	A876	F523	F530	F537	F544
A870	F517	F524	F531	F538	
A871	F518	F525	F532	F539	

Name ..... (Position) .....

Company .....

Street .....

City ..... Zone ..... State .....

CROSBY

THE MARK OF QUALITY

PINENE
PINE OILS
DIPENTENE
B WOOD RESIN
FF WOOD ROSIN
ALPHA TERPINEOL
TERPENE SOLVENTS
PALE WOOD ROSINS
(All grades from I to X)
LIMED WOOD ROSINS
RESINOUS CORE BINDER
STEAM-DISTILLED WOOD TURPENTINE

CROSBY NAVAL STORES, INC.
PICAYUNE, MISSISSIPPI

A. A.
STANDS NOT ONLY
FOR
ALLIED ASPHALT
BUT ALSO FOR THEIR
ALL AMERICAN WAXES
And Allied Products
Readily Available
Such As...

MICRO CRYSTALLINE WAXES
(*Some Allocation Free*)
for Laminating and Dipping Purposes, Wax-Coatings, Moisture-Proofing, Glassines, Paraffine-Extenders, etc.
M. P. 130° F. up to 165° F.
in Olive-green, Amber and Natural Yellow colors
Needle Penetrations at 77/100/5 from 16 to 95
ALSO
AMERICAN OZOKERITE-TYPE WAXES
BEESWAXES: Yellow Refined and Fully Bleached
SUBSTITUTE WAXES
Beeswaxes Ouricury Carnauba Montan
AA516 WHITE AMORPHOUS MINERAL WAX
A.S.T.M. Melting Point 160-165° F.
Needle Penetration at 77/100/5 = 13-16
High M. P. Straight Hydro-Carbon Base "ALKRA" Binding Agents
WAX AND OIL DIVISION

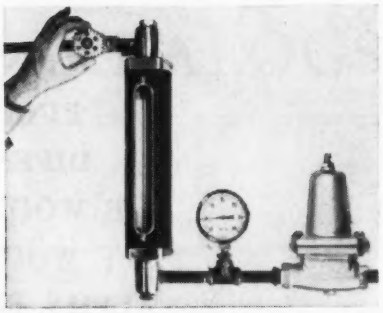
ALLIED ASPHALT & MINERAL CORP.
217 Broadway, NEW YORK 7, N. Y. Factories:
Telephone: REctor 2-2955 Brooklyn - Bayonne - Dunellen
AGENTS IN ALL PRINCIPAL CITIES in U. S. A. and Canada

waxes
DT

SPECIAL LIGHT American Double Refined
CANDELILLA
DOMESTIC
OZOKERITES
WHITE AND YELLOW
CERESIN WAXES
VARIOUS MELTING POINTS
AMORPHOUS WAXES
Write for Bulletin C

DISTRIBUTING & TRADING CO.
444 MADISON AVENUE • NEW YORK 22

An ANSUL Fingertip Control SO_2 SYSTEM makes SULFUR BURNING obsolete!



Install an Ansul SO_2 System and get these Proved Advantages

FINGER-TIP CONTROL—Easy, positive, finger-tip control providing extreme accuracy for reaction or adjustment of pH.

GREATER ECONOMY—Small investment in equipment, materially reduced operating and maintenance costs, and freeing of valuable floor space.

HIGHER PURITY—Elimination of impurities inherent in burner gases (Ansul Liquid SO_2 is 99.9+% [by weight] PURE).

GREATER SOLUBILITY—Solubility in water is 4 to 5 times greater than SO_2 from burner gas.

Easy to Install... Easy to Operate

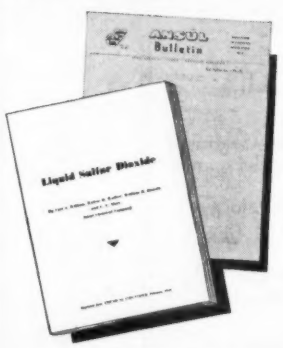
WRITE THE ANSUL TECHNICAL STAFF FOR FURTHER INFORMATION

LIQUID Sulfur Dioxide by ANSUL

PHYSICAL PROPERTIES

Chemical formula	SO_2
Molecular weight	64.06
Color (gas and liquid)	Colorless
Odor	Characteristic, pungent
Melting point	−103.9° F. (−75.5° C.)
Boiling point	14.0° F. (−10.0° C.)
Density of liquid at 80° F.	(85.03 lbs. per cu. ft.)
Specific gravity at 80° F.	1.363
Density of gas at 0° C. and 760 mm.	2.9267 grams per liter (0.1827 lb. per cu. ft.)
Critical temperature	314.82° F. (157.12° C.)
Critical pressure	1141.5 lbs. per sq. in. abs.
Solubility	Soluble in water
Purity	99.9+% (by wt.) SO_2 (H_2O less than 0.01%)

*REG. U. S. PAT. OFF.



Send for Bulletin 020.1, "A Comparison of Ansul SO_2 and Sulfur Burner Gas," and also for your copy of "Liquid Sulfur Dioxide"—a treatise on the properties, characteristics, and industrial uses of Liquid Sulfur Dioxide—written by the Ansul Technical Staff.

WRITE: Dept. B.

ANSUL CHEMICAL COMPANY, MARINETTE, WIS.

Eastern Office: 60 E. 42nd St., New York City

F531. Leather Packings. A 4-page leaflet issued by Alexander Brothers lists their line of leather packings giving prices.

F532. Management Engineering. The Methods Engineering Council has just published a new 20-page brochure describing in detail the functions of modern management engineering.

F533. Matting. New literature has been issued by the American Mat Corp. on their complete pre-war line of floor matting.

F534. Microscope Techniques. Technical Bulletin No. 770 entitled "Microscopical Techniques for the Study of Dyeing," issued by the Calco Chemical Division American Cyanamid Co., describes the techniques developed by this company for the study of dyeing.

F535. Oil Clarification. Gale oil clarification systems are described and pictured in a 4-page folder of the Gale Oil Separator Co.

F536. Oven Furnaces are described and pictured in a 12-page bulletin (No. 417) of W. S. Rockwell Co.

F537. pH Control. A completely revised edition of W. A. Taylor and Co.'s combination handbook and catalog, "Modern Hand Chlorine Control," describes the application of pH, chlorine and phosphate control containing both simple and technical explanations.

F538. Plant Location. The Contra Costa County Development Association has issued an illustrated folder describing the advantages of industrial locations in Contra Costa County, Cal.

F539. Process. Bulletin 2051 of Blaw-Knox Co. is a 24-page booklet describing the "Emersol" process for the separation of fatty acids.

F540. Pumps. The LaBour type G centrifugal pumps are pictured and described in a 12-page bulletin (No. 51) of the LaBour Co., Inc.

F541. Rotameters. Catalogue section 45-A, issued by the Fischer and Porter Co., describes a complete line of flow metering equipment made by this company, and contains a chart of recommended rotameter applications.

F542. Separators. A line of emulsion separators is described in the bulletin EX-101 available from Flotrol Systems, Inc.

F543. An 8-page pamphlet describing stainless steels, giving mechanical, corrosion, and fabrication properties, has been issued by the Jessop Steel Co.

F544. Welding Accessories. Price list and catalog. Air Reduction Co.

Available In Quantity

Kodak Chrome Alum **is a uniform, crystalline product, completely soluble in water. It is held to rigid Kodak standards of chemical purity. Available in quantity for commercial use, it is recommended for the tanning, textile, and ceramics industries, and photography. Eastman Kodak Company, *Chemical Sales Division*, Rochester, N. Y.**

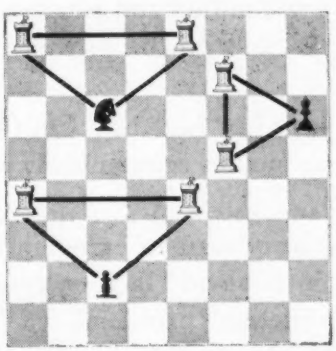
KODAK Chrome Alum

(Potassium Chromium Sulfate)

TESTED EK CHEMICALS

An impossible chess set-up...

BUT MIGHTY USEFUL FORMULAS



Metal Peroxides by Becco are insoluble in water but soluble in mineral acids. They are compatible with many inorganic and organic materials and can be used in the preparation of tooth powders, in processing of foodstuffs, and, in general, where oxidation at high temperatures is required. Some of these peroxides also find use as chemo-therapeutical agents and for cosmetic and pharmaceutical preparations.

ACTIVE OXYGEN IS ON ACTIVE DUTY

OTHER BECCO PRODUCTS:

Electrolytic Hydrogen Peroxide —100 vol. (27.5% by weight)
Ammonium Persulfate
Potassium Persulfate
Pyrophosphate Peroxide*
Sodium Carbonate Peroxide*
Acetyl Peroxide*
Urea Peroxide
**Available in research quantities only at present.*

BECCO MAGNESIUM PEROXIDE—50%
White Powder.
Contains 14.2% active oxygen.
Exceedingly stable even at temperatures above 100° C.

BECCO CALCIUM PEROXIDE—60%
Yellowish Powder.
Contains 13.6% active oxygen.
Has outstanding stability even above 100° C.

BECCO ZINC PEROXIDE—45%
White Powder.
Contains 7.4% active oxygen.
Extremely stable even above 100° C.

The available supply of all three of these Metal Peroxides is limited at present.

BUFFALO ELECTRO-CHEMICAL CO., Inc.
BECCO SALES CORPORATION
SALES AGENTS BUFFALO 7, N. Y.

Pharmaceuticals
Synthetic, Organic
Insecticides and Germicides
Research Chemicals

ACETYLTANNIC ACID, U. S. P. (chemical name for Tannigen)
ALBUMIN TANNATE, U. S. P. (chemical name for Tannalbin)
ANTIPYRINE SALICYLATE, N. N. R.
BETA NAPHTHYL BENZOATE, N. N. R.
CALCIUM BENZYL PHTHALATE, pure
BENZYL DISULFIDE
CALCIUM IODOBEHENATE, U. S. P.
CALCIUM LEVULINATE, pure
CAMPHOSULFONATES
CAMPHORIC ACID, C. P.
ETHYL CHAULMOOGRATE, U. S. P.
HELMITOL, N. N. R.
HEXAMETHYL — DIAMINO-ISOPROPANOL-DI-IODIDE Quaternary Ammonium Compound (chemical name for Endoiodin and Iodisan)
• • • •
THYMOLPHTHALEIN
O-CRESOLPHTHALEIN
PHENOLSULPHONPHTHALEIN

Ask for our Complete List of Chemicals

FINE ORGANICS
Incorporated
• • • • MANUFACTURING CHEMISTS
Executive Offices:
211 East 19th Street Gramercy 5-1030 New York 3, N. Y.



DORR sells Equipment to do the job

Wherever finely divided liquids and solids are handled and processed, Dorr equipment is known. The Dorr reputation is built on the proved capacity of Dorr Equipment to *get the results you want.*

The Dorr approach is not "how will this unit fit in," but "how can this operator's marginal ores be made to pay" . . . or "his production economically streamlined" . . . or "his recovery of fines increased . . ."

Standard Dorr equipment is based on Dorr's thirty years of experience in working with just such specific processing problems, in mine and factory, plant and mill, from Cincinnati to Cape Town. But when "different" problems call for equipment of new design, Dorr designs it, builds it, tests it, and supervises initial operation. And always, results come *first,* equipment second.

The *continued* performance of Dorr equipment in solving the original problem is assured, through the extensive Dorr service organization, far beyond the installation date.

When the handling of finely divided liquids and solids is a factor in your operations, call in a Dorr engineer at the earliest stage of your planning.

DORR

RESEARCH ENGINEERING EQUIPMENT

ADDRESS ALL INQUIRIES TO OUR NEAREST OFFICE

DORRCO

536

THE DORR COMPANY, ENGINEERS

NEW YORK 22, N. Y. . . . 570 LEXINGTON AVE.
ATLANTA 3, GA. . . . WILLIAM-OLIVER BLDG.
TORONTO 1, ONT. . . . . 80 RICHMOND ST. W.
CHICAGO 1, ILL. . . . . 221 NO. LA SALLE ST.
DENVER 2, COLO. . . . . COOPER BUILDING
LOS ANGELES 14, CAL. . . . . 811 WEST 7TH ST.

RESEARCH AND TESTING LABORATORIES
WESTPORT, CONN.

SUGAR PROCESSING
PETREE & DORR DIVISION
570 LEXINGTON AVE., NEW YORK 22

NEWS OF THE MONTH

Nazi Oil Secrets To Be Distributed by Bureau of Mines

SECRETS of Nazi research on solid and liquid fuels which have been uncovered in Germany and removed by Allied civilian investigators will be analyzed and distributed to American industry by the Bureau of Mines as rapidly as possible, Secretary of the Interior Harold L. Ickes has announced.

This technical information, which was gathered mainly under the direction of the recently dissolved Technical Industrial Intelligence Committee of the Joint Army and Navy Chiefs of Staff, is estimated to be worth millions of dollars and would have required many years of research by American scientists and technicians to develop independently.

Secretary Ickes stated that already many of the German documents have been microfilmed and distributed, and that a number of reports of the American investigators have been made available to industry and educational institutions.

To facilitate this service, in accordance with the orders of Secretary Ickes, R. R. Sayers, Director of the Bureau of Mines, has established a special section within the Bureau to coordinate the compilation of the foreign technical data and to prepare them in form for use by industry and science. L. L. Newman, a Bureau engineer, will be in charge of the new unit.

"In addition to research data, patents, engineering reports and other documents," Dr. Sayers stated, "Bureau technicians and other investigators have collected samples of apparatus, machinery, plant equipment, catalysts and end products of manufacture from German laboratories and plants. The Bureau of Mines, with the cooperation of private industry, will examine and test these materials and publish the results of the studies."

More than 100 reels of microfilm, representing about 100,000 pages of enemy documents, have been received from London where they were made under the direction of Dr. Gunther von Elbe, of the Bureau. The negatives are being developed in Washington, and the Bureau will assemble a complete library of the films and make separate prints of important sections. Two microfilm viewers are now available in the Bureau of Mines and accredited members of the petroleum and solid fuels industries may inspect the films.

Copies of the microfilms dealing with synthetic fuels are being sent to the Technical Advisory Committee of the Petroleum Industry War Council, which in turn will distribute them to petroleum research organizations.

Penn Salt Appoints E. B. Gunyou



E. B. Gunyou, formerly with Production Division, U. S. Army Service Forces and Liaison Officer to Chemicals Bureau, WPB, has been appointed assistant to the manager of research and development department of Pennsylvania Salt Manufacturing Co., Philadelphia.

Alkali Plant Available

The Reconstruction Finance Corporation is offering for sale or lease the government-owned plant at Natrium, New Martinsville, W. V., equipped to produce electrolytic chlorine and caustic soda. The plant, which was operated by the Pittsburgh Plate Glass Company for the government, has a group of buildings with 327,600 square feet.

Dow Plans $15,000,000 Plastics Expansion

A projected $15,000,000 expansion in plastics production facilities of The Dow Chemical Company has been outlined by Willard H. Dow, the company's president.

About two-and-one-half million dollars worth of new construction is already in progress, the balance being represented by a continuing extension of facilities to be added over the period of the next five years.

The Dow Company hopes in five years or less to be producing at least 150 million pounds of plastic materials per year, Dr. Dow said. The expansion of Dow's facilities, it was explained briefly, is planned around a three story plastics warehouse with production wings attached on either side. This can be extended "almost indefinitely" and at the same time any required number of production wings added along the sides.

Flanagan to Manage Goodrich Development Laboratory



George W. Flanagan, formerly in charge of Geon latex development, has been made manager of the B. F. Goodrich Chemical Co. development laboratory in Cleveland, according to announcement by technical director, F. K. Schoenfeld.

Monsanto to Build Large Scale Caffeine Plant

Monsanto Chemical Company has disclosed its intention to construct the world's first large-scale plant for the manufacture of synthetic caffeine.

Osborne Bezanson, vice-president and general manager of the company's organic chemicals division, has said that a $1,500,000 production facility will be built in St. Louis, and that it will utilize an improved process.

ASTM Presents Dudley Medal to Findley

At a district meeting of the American Society for Testing Materials in Chicago, J. R. Townsend, president of the A. S. T. M., awarded the 1945 A. S. T. M. Charles B. Dudley Medal to W. N. Findley, Assistant Professor of Theoretical and Applied Mechanics, University of Illinois, for his outstanding paper on "Creep Characteristics of Plastics." This paper, part of the Symposium on Plastics

held the previous year, was considered by the Medal Committee to have been of outstanding merit constituting an original contribution on research in engineering materials. The Charles B. Dudley Medal is named for the Society's first president.

Spectroscopy Society Established in New York

Announcement has been made of the formation of the Society for Applied Spectroscopy. The society has been organized by a group of practicing spectroscopists working in the Metropolitan area who feel the need for an organization which will offer an opportunity for general discussions of the common problems arising in spectroscopic analysis.

Meetings will be held the first Tuesday evening of each month and will consist either of a lecture by some prominent speaker or a symposium on some general topic. At its first two meetings the society has heard lectures by O. S. Duffenduck, of the North American Phillips Co., and G. N. Dicke, of Johns Hopkins University.

West Virginia University to House Liquid Fuel Research

A new laboratory and research unit where the Bureau of Mines will conduct experiments in the production of gases required in the manufacture of synthetic liquid fuels from coal will be established soon on the campus of West Virginia University at Morgantown, W. Va., according to Secretary of the Interior Harold L. Ickes.

Under a cooperative agreement between the Bureau of Mines and the University, the Bureau will initiate a research program involving about $100,000 annually. Laboratories will be provided by the University, and will be staffed with Bureau personnel.

Establishment of the laboratory at West Virginia University will be under the direction of W. W. Odell, chief of the Bureau's Synthesis Gas Production Division.

From 18 to 20 Bureau technologists versed in the specialized phases of the production of synthetic liquid fuels from coal will be employed in the West Virginia University laboratory. This staff, however, may be augmented by members of the West Virginia University faculty or graduate "fellows" selected by the University to work under the technical direction of the Bureau's representative in charge.

Chester A. Snell Joins Foster D. Snell



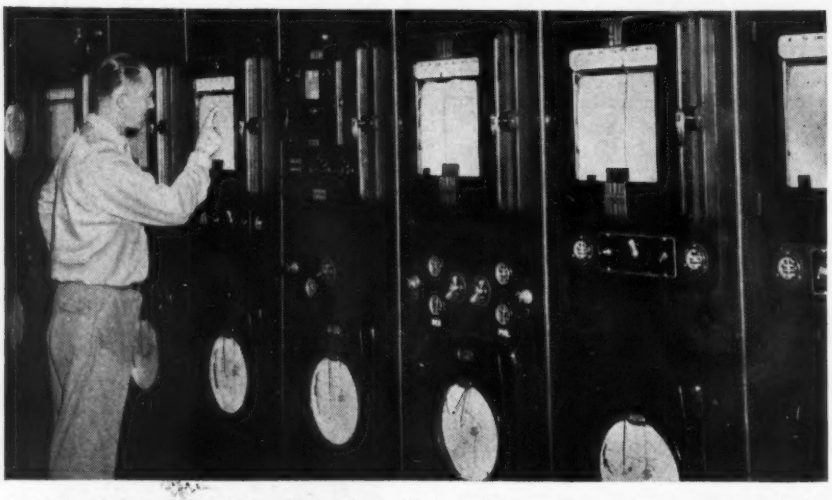
Chester A. Snell, who has been connected with the chemical development division of the Aluminum Company of America, has joined the staff of Foster D. Snell, Inc., Brooklyn, New York.

Paul-Lewis Laboratories Award in Enzyme Chemistry

The Paul-Lewis Laboratories, Inc., of Milwaukee, Wis., has established an annual award for outstanding work in the field of enzymes, and requested the American Chemical Society to administer it. At the recent board of directors meeting the proposal was accepted by the society.

The award is to be made for the purpose of stimulating fundamental research in enzyme chemistry in the United States by young men educated in a college or university in the United States.

The award is to consist of $1,000 and a bronze medal (or diploma). An additional



Atlantic Refining Co.'s Foster-Wheeler Unit for high-octane gasoline is controlled from this panel. It employs Micromax Controllers with thermocouples for the debutanizing and depropanizing units, and Micromax Controllers with Thermohms for deisobutanizing.

What *Other* Records Can Micromax Give You?

Engineers in most refineries know that Micromax instruments can do an outstanding job of controlling and recording temperatures, and perhaps one or two other conditions. But few engineers have discovered the great variety of these other ways in which Micromax may be able to help control industrial processes.

Some of these uses are shown at the right. In most cases, new light is shed on the operation of a process, as soon as Micromax begins to record, because the sensitivity, speed and readability of the instrument enable it to tell operators things they never knew before.

If you have a problem in which a Micromax Recorder or Controller could apply, one of our engineers will be glad either to call or to send a catalog, as you prefer.

Acid Strength?
CO_2?
SO_2?
pH?
Flow?
Level?
Pressure?
High Temperature?
Medium Temperature?
Low Temperature?
Effluent Neutrality?
High-Speed Analyses?
Or any one of several others?

LEEDS & NORTHRUP COMPANY, 4982 STENTON AVE., PHILA., PA.

LEEDS & NORTHRUP

MEASURING INSTRUMENTS · TELEMETERS · AUTOMATIC CONTROLS · HEAT TREATING FURNACES

Jrl Ad N-00A(8a)

amount up to $150, or as much thereof as necessary, is available to the recipient toward traveling expenses to the national meeting of the American Chemical Society at which the award will be presented.

J. J. Willaman, of the Eastern Regional Research Laboratory of the Department of Agriculture, has been appointed chairman of the Canvassing Committee. The administration of this award will follow the general rules applied to other society awards.

CALENDAR *of* EVENTS

AMERICAN CERAMIC SOCIETY will hold its 48th annual meeting at the Hotel Statler, Buffalo, April 28—May 1.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS will hold the annual meeting at the Stevens Hotel, Chicago, December 16-19.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS will celebrate its 75th anniversary at the Waldorf-Astoria, New York, September 16-18, 1946.

AMERICAN SOCIETY FOR TESTING MATERIALS will hold the 49th annual meeting in Buffalo, N. Y., June 24 to 28, 1946. The 1946 Spring Meeting will be held in Pittsburgh during the week of February 25 to March 1.

DRUG, CHEMICAL AND ALLIED TRADES SECTION, NEW YORK BOARD OF TRADE, INC., will hold the annual dinner in March, 1946.

ELECTROCHEMICAL SOCIETY will hold a national convention in Birmingham, Ala., April 11, 12 and 13, 1946.

NATIONAL ASSOCIATION OF INSECTICIDE AND DISINFECTANT MANUFACTURERS, INC., will hold their 32nd annual meeting at the Hotel Commodore in New York, December 3 and 4, 1945.

NATIONAL FARM CHEMURGIC COUNCIL, INC., will hold its deferred 11th annual meeting at the Statler Hotel, St. Louis, Mo., March 18-20, 1946.

PACKAGING EXPOSITION of 1946 will be held in the Public Auditorium, Atlantic City, N. J., April 2 to 5, inclusive, 1946, sponsored by the American Management Association.

PRODUCTS OF TOMORROW EXPOSITION will be held at the Coliseum in Chicago, April 27—May 19, 1946.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY will hold the national meeting at the Hotel Commodore, New York, during the week of February 24, 1946.

20TH EXPOSITION OF CHEMICAL INDUSTRIES will be held at Grand Central Palace, New York, February 25 through March 2, 1946.

COMPANIES

Oil-Shale Plant Under Construction

Contract awards for two retorts and an office building, together with new plans for shale transportation and the provision of housing facilities at the oil-shale demonstration plant now under construction for the Bureau of Mines near Rifle, Colo., have been announced by Secretary of the Interior Harold L. Ickes.

The oil-shale demonstration plant, one of the major installations authorized by Congress in the synthetic liquid fuels act, is expected to go into production late next spring. The plant will serve as a proving ground for processes being developed to convert the Nation's large reserves of oil shale into an auxiliary source of fuels and lubricants.

Hercules Adds to Naval Stores

Hercules Powder Company has announced a $1,250,000 addition to their naval stores plant at Brunswick, Ga., now under construction, is expected to be producing by April 1, 1946.

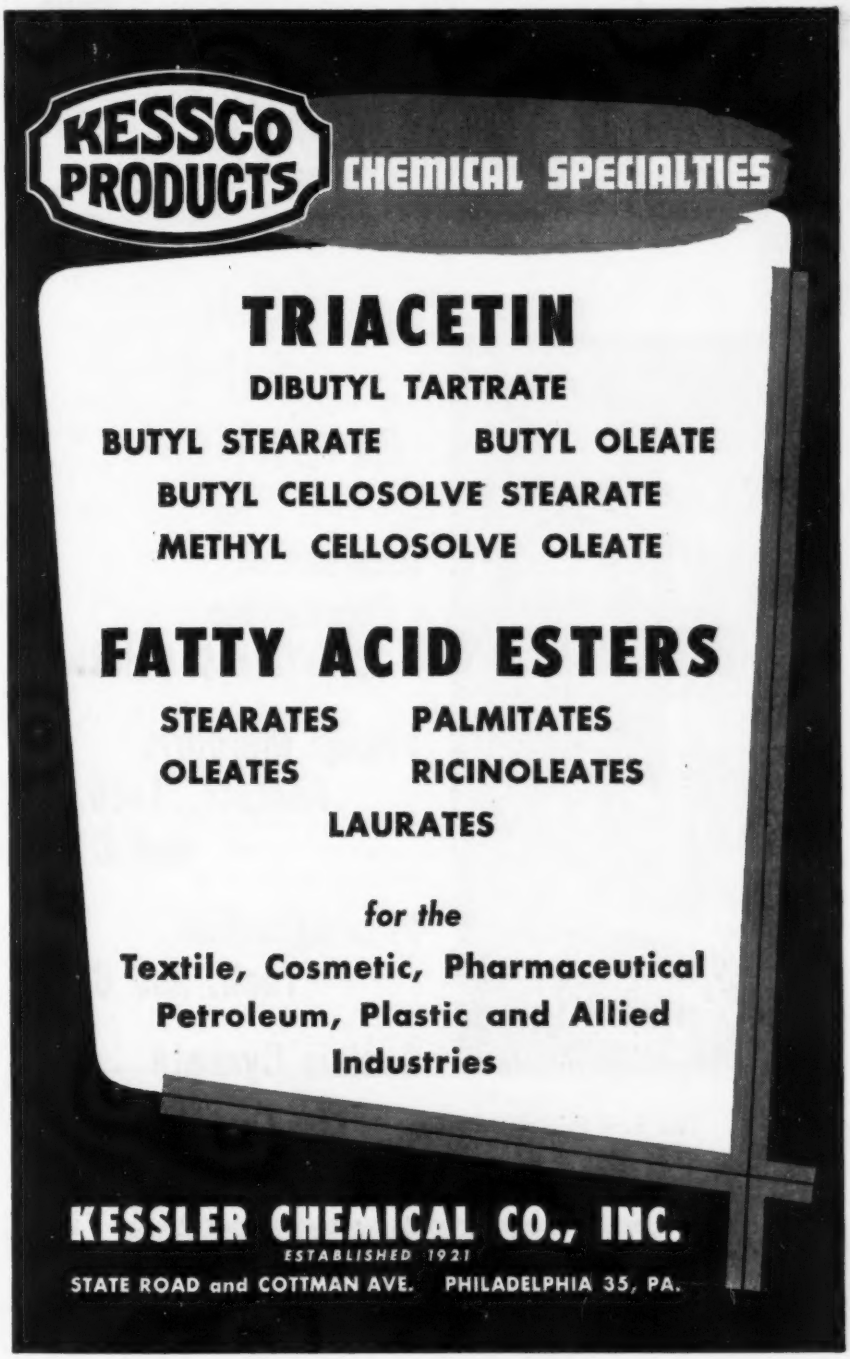
The new unit will add approximately 3,600,000 pounds of rosin and resinous products and 720,000 pounds of liquid products to the plant's monthly output.

Located in the heart of the Florida-Georgia pine belt, Hercules' Brunswick plant is one of the major wood naval stores producing plants in the nation. This plant and the company's Hattiesburg, Miss., unit produce, at capacity rates, finished naval stores of all kinds in excess of 300,000,000 pounds a year.

Upon the completion of the new unit, Hercules wood naval stores production capacity will total more than 350,000,000 pounds of finished wood naval stores products each year, which is approximately 50 per cent of the nation's supply. A major portion of this supply will be used by other company departments in the manufacture of special chemical materials for industry.

Monsanto Establishes Plastics Advisory Group

Monsanto Chemical Company's Plastics Division has announced the formation of an application advisory group to assist manufacturers in using plastics, without



charge or obligation. Known as the plastics technical council, the group was created after a study of the information needs of manufacturers using or contemplating the use of plastic materials in their products or processes.

Polymer Corp. Builds Pilot

To assist in the establishment of the war-built $48 million Polymer Corporation as a successful peacetime producer of synthetic rubbers, the board of directors has recently authorized construction of a new pilot plant and extended research laboratory facilities. Scheduled to function as Polymer Research and Development Division, under the direction of E. R. Rowzee, it is stated that both the pilot plant and laboratories will be ready for the installation of equipment by the end of this year and that the pilot plant will be operating by early spring.

The pilot plant will consist of a polymerizing section for GR-S containing complete facilities for small-scale reaction studies, and a monomer preparation area designed primarily for the production of small quantities of styrene-like monomers but capable of being used for the production of small quantities of any monomer.

New Test Laboratory for Elliott Company

Construction of a new test laboratory to cost $750,000 and greatly extending the facilities of the research engineering division of the Elliott Company, Jeannette, Pa., has been made public by Grant B. Shipley, president.

Plans for extensive research and development on gas turbine power plants have called for the construction of a new main building, and several small buildings separate and adjacent to it.

Conn Returns to Perco



Following service with the Naval Air Forces, Miller W. Conn has resumed his duties as manager of the Perco division, chemical products department, Phillips Petroleum Co.

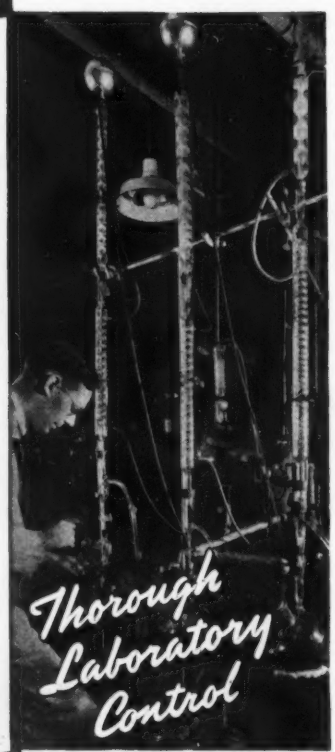
Company Notes

New plant facilities, which will treble production capacity and provide increased employment at HERCULES POWDER COMPANY'S Mansfield, Mass., plant have been described by R. F. Schlaanstine, director of operation, for the company's synthetics department. The plans include a plant for the production of alkyd resins.

New grants for research, amounting to $38,200, by the SUGAR RESEARCH FOUNDATION have brought the grand total over the $415,875 mark. Robert C. Hockett, scientific director of the foundation, has announced awards to eight universities and a state experimental station. Recipients of these grants include Purdue University, University of Utah, University of Texas Medical School, University of Wyoming, Emory University Medical School, the California institute of Technology, Tufts Dental College, University of Rochester, and the New Jersey State Experiment Station.

ASSURED QUALITY

IN FINE CHEMICALS



Ammonium Thiosulfate Crystals & Solution

Phenyl Mercuric Acetate, Tech. and C.P.

Phloroglucinol Tech. and C.P.

Sodium Cyanate



The new Edwal Catalog and Price List No. 10-C (dated Oct. 1945) listing many new chemicals is now ready. Write for it today.

EDWAL

The EDWAL Laboratories, Inc.
732 FEDERAL STREET CHICAGO, ILLINOIS

NEWS *of* SUPPLIERS

WILLIS ENGINEERING COMPANY, Ohio, distributors for Briggs Clarifier Company oil filtration products, recently announced that their general offices have been moved to Burton, Ohio, and that a new office has been opened in Cleveland, 206 Plymouth Bldg.

THE HANSON-VAN WINKLE-MUNNING CO., of Matawan, N. J., has announced that Paul R. Cutter has joined their staff as an electrochemist. He previously was assistant chief chemist of Consolidated-Vultee Aircraft Corp., Fort Worth, Texas. Robert E. Creamer who was

recently supervisor of plating at the U. S. Naval Air Station in Quonset Point, R. I., has returned to the company. Richard E. Waite, formerly in charge of plating and metal finishing at Stromberg-Carlson is now with H-VW-M.

G. N. Emmanuel has joined the metallurgical staff of THE BABCOCK & WILCOX TUBE COMPANY as research metallurgist. He was formerly associated with the Murray Company, Boston, Mass.

ROBINS CONVEYORS, INC., Passaic, N. J., manufacturers of materials handling machinery, has announced opening of new offices under the direction of Charles A. Thompson, in the Brown-Marx building, First Ave. and 20th St. in Birmingham, Alabama.

Earl W. Flosdorf, for twelve years Assistant Professor of Bacteriology in the Medical School of the University of Pennsylvania, has resigned that position to apply his full time to the duties of Director of Research and Development for the F. J. STOKES MACHINE CO.

George H. Tulley has been named assistant sales manager of the METALS REFINING COMPANY division of THE GLIDDEN COMPANY, with headquarters in Hammond, Indiana, David N. Burruss, Jr., division manager, has announced.

PROCTOR & SCHWARTZ, INC., Philadelphia drying machinery manufacturers, have announced the opening of a new branch office in the Wilder Building, Charlottle, N. C. John R. Schenck will be in charge. Prior to his entry into the service, Major Schenck was associated with the agency which represented Proctor & Schwartz in Charlotte.

Lester N. Harrison has been named Southeastern district manager of the VOTATOR DIVISION OF THE GIRDLER CORPORATION, Louisville, Ky., with headquarters in the Johnston Building, Charlotte, North Carolina. During the war, Mr. Harrison served with the Seabees as a combat diver in the Pacific Theatre, engaging in underseas repair and salvaging operations. He joined Votator in June, 1944, following his medical discharge.

Oscar J. Friend, 2nd Ave. South & 6th St., Minneapolis, has been appointed sales representative for G. S. ZIEGLER & Co. throughout the Minneapolis territory.

Miller Now With McKesson & Robbins



H. Robert Miller has joined the sales staff of the industrial chemicals division of McKesson & Robbins, Inc. He was formerly in charge of industrial chemical sales in the New York office of Hercules Powder Co.

Plans have been completed for two new buildings to be added to the Container Company plant of CONTINENTAL CAN COMPANY at Van Wert, Ohio, according to H. A. Eggerss, vice president in charge of the paper and plastics divisions. The new 142,500 sq. ft. factory building will consist of two warehouses for raw materials and finished stock, a mezzanine floor, metal parts department, offices and so forth. The new research and engineering building, 66 x 81, two floors and basement, will be air conditioned and equipped with special temperature and humidity controlled test rooms. This building will be the headquarters of all engineering research and design of both product and equipment development for the paper division.

The first "Big Inch" natural gas pipeline to be built in Russia, extending from the city of Saratov, in the Ural Mountain gas-producing section, to Moscow, a distance of over 500 miles, will be equipped with American compressors. The export department of THE COOPER-BESSEMER CORPORATION has disclosed that an order for 24 of the company's CMV, 10-cylinder compressors had been placed for early delivery. Each compressor is a 1000-horsepower unit. The pipeline, which will have as its primary purpose the transportation of natural gas to furnish domestic and industrial fuel to the Russian capital, will have a capacity of approximately 80 million cubic feet a day. The compressors will be installed in six booster stations located along the pipeline, each to be equipped with four of the American-made units.

ASSOCIATIONS

E.C.P.D. Elects Officers

At the 1945 annual meeting of the Engineers' Council for Professional Development which was held in the Engineering Societies Building, New York, N. Y., Everett S. Lee, engineer of the General Engineering and Consulting Laboratory, General Electric Company, Schenectady, N. Y., was re-elected chairman and James W. Parker, president, general manager, and director, The Detroit Edison Company, Detroit, Mich., was re-elected vice-chairman. Wm. N. Carey, secretary and executive officer of the A. S. C. E., and H. H. Henline, national secretary, A. I. E. E., were elected secretary and assistant secretary, respectively.

For chairman of E. C. P. D. committees the following elections were announced: committee on student selection and guidance, Carl J. Eckhardt, Jr., pro-

Aromatic Chemicals

IN INDUSTRY

THE field of Aromatic Chemicals in Industry has widened considerably in recent years.

NO longer is the use of Perfumes restricted to the Soap, Cosmetic and Perfume Manufacturer.

PERFUMES are now widely used by such diverse manufacturers as: the rubber industry, the paper industry, the textile industry and many others.

FURTHER research is constantly being made both by us and by manufacturers of many diverse products.

PERHAPS we can be of service to you.

Among our many products the following are proving useful in numerous industries:

Butyl Phenyl Acetate	**Cinnamic Alcohol**
Lignin Vanillin	**Ionone Ketone**
Veratraldehyde	**Ionone Methyl**
Ethaldehyde	**Acetophenone**

Phenyl Acet Aldehyde Di Methyl Acetal
Di Phenyl Acetal of Phenyl Acet Aldehyde
Hydratropic Aldehyde
Para Methyl Hydratropic Aldehyde

To deodorize Paints for Interior Finishes
DEODORANT BOUQUET 4068

Write us for Information

Aromatics Division
GENERAL DRUG COMPANY
125 BARCLAY STREET NEW YORK 7, N. Y.
9 S. Clinton Street, Chicago 6 1019 Elliott Street, W., Windsor, Ont.

fessor of mechanical engineering and superintendent of utilities, University of Texas; committee on engineering schools, D B. Prentice, president, Rose Polytechnic Institute; committee on professional training, C. A. Pohl, consulting engineer, New York; and committee on professional recognition, N. W. Dougherty, dean of engineering, University of Tennessee.

PERSONNEL

Bowman to Manage Jefferson Market Research

Appointment of Wm. H. Bowman as market development manager of Jefferson Chemical Company, Inc., has been announced by P. M. Dinkins, vice-president and general manager. Dr. Bowman will be responsible for organizing market research, market development and sales and technical service facilities. Before joining Jefferson he was manager of the technical service and market development division of Westvaco Chlorine Products Corporation, and prior to that he held research and development posts with Shawinigan Chemicals, Ltd., and Armstrong Cork Company. Dr. Bowman has also served as a member of the chemical engineering and chemistry faculties of the University of Toronto, New York University, and the Case School of Applied Science. At the present time he is on the executive committee of both the Chemical Market Research Association and the technical service group of the Chemical Industry.

Hercules Reports Appointments

Three personnel changes in Hercules Powder Company's cellulose products department have been made known by J. B. Weisel, director of sales and development. LeRoy T. Barnette is now supervisor of branch offices, while J. K. Speicher is assistant technical service manager. L. C. Kleinhans is manager of the department's New York office.

Floyd L. Boddicker, former manager of the Hercules-operated Sunflower Ordnance Works, has been appointed manager of cellulose products operations at the Hercules Powder Company, Hopewell, Va., plant. He succeeds Clark B. Kingery, who has been appointed assistant director of personnel for the company.

Du Pont Announces Personnel Shifts

Robert L. Richards, who has been assistant manager of the cellophane division since May 1, 1944, has been appointed manager of the nylon division of E. I. du Pont de Nemours & Co. He succeeds Charles A. Cary, who is now assistant general manager of the rayon department. Arlington Kunsman, director of production of the rayon division, succeeds Mr. Richards as assistant manager of the cellophane division.

According to announcement by the explosives department, Fred G. Theeieck, manager of the Chickasaw Ordnance Works, Memphis, Tenn., has been named manager of the Wabash River Ordnance Works, Terre Haute, Ind.

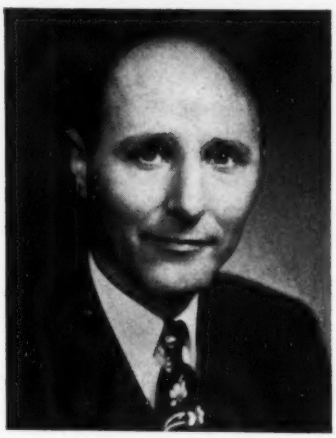
J. Frederic Walker has been appointed to head the new formaldehyde laboratory being established at the Perth Amboy, N. J., plant of the electrochemicals department.

The appointment of George De Witt Graves and Robert Emmett Burk as assistant chemical directors of the plastics department, has been announced.

A new sales development section in the finishes division has been established. It is under the management of S. L. Johnston, former distribution manager. D. V. Bauder, merchandising manager, has been appointed assistant sales development manager.

Walter O. Simon, manager of the Hanford Engineering Works, Richland, Wash., has been named manager of the Yerkes rayon plant at Buffalo, N. Y. Mr. Simon succeeds Cantwell Clark, who becomes manager of the nylon plant at Martinsville, Va.

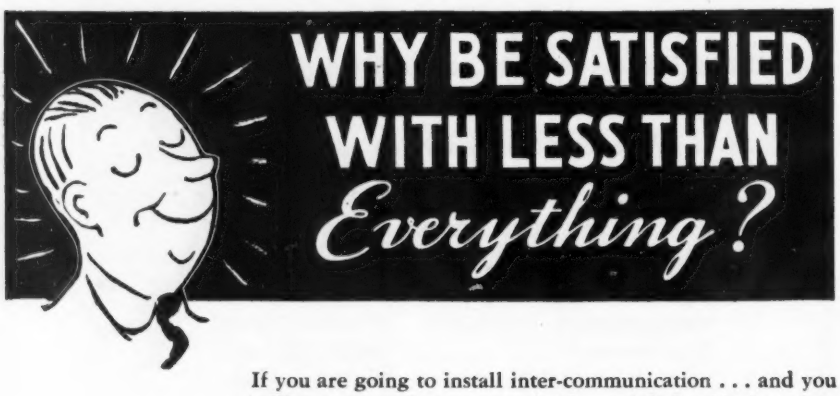
Reinhart to Manage Neuberg Coal Tar Chemicals



W. B. Reinhart, formerly Chief of the Tar Acid Unit of the Chemical Bureau of the War Production Board, has joined William D. Neuberg Co. as manager of the coal tar chemicals department.

Universal Names Deanesley

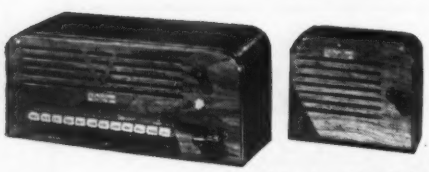
R. M. Deanesley, recently with M. W. Kellogg Company and Kellex Corporation, has joined the research staff of Universal Oil Products Company. He will be in charge of a new department which is being established in the company's Riverside laboratories. Mr. Deanesley has had extensive experience in the petroleum industry, especially in the light hydrocar-



If you are going to install inter-communication . . . and you *will* sooner or later . . . why be satisfied with *less* than *"Everything"*?

You want *all* that modern styling can provide in beauty of cabinet design and finish . . . *all* that years of exhaustive research and engineering skill are capable of producing in convenience, efficiency and long-lasting dependability. All of which you *do* obtain in *Talk-A-Phone.*

The world's most highly perfected and complete line of inter-communication *"Has Everything"*. There's a Talk-A-Phone unit engineered to *fully* meet your needs, at an economical cost. See your jobber or write for catalog picturing and describing an intercommunication unit for every requirement.



TALK-A-PHONE MFG. CO.

1512 S. PULASKI ROAD, CHICAGO 23, ILL.

bon field, having been with Shell Development Company for 15 years before joining the Kellog organization.

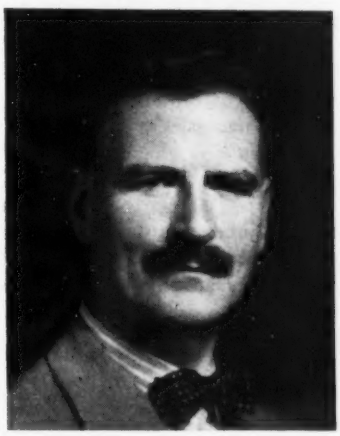
New Barrett Staff Appointments

The Barrett Division of the Allied Chemical and Dye Corporation has announced the appointment of Roy S. Marsden, as assistant manager of its sales agency department, with headquarters in New York. Mr. Marsden was formerly located at the Atlantic office of the company.

Walter S. Colvin, formerly sales manager for the New York District, has been appointed sales manager in charge of nitrate sales for the Northern District. He will be located in the New York office.

Henry L. Taylor, former chief of the nitrogen unit of the War Production Board, has joined the Barrett Division as assistant to W. H. Mortimer, who is in charge of sulphate of ammonia sales, with headquarters at New York.

Warner Appoints Warburton



Eliot Warburton has been named managing director of all William R. Warner & Co., Inc., subsidiary companies in Great Britain. He was formerly connected with the Vick Chemical Co.

Norcross Elected Freeport Sulphur Vice-President

F. S. Norcross, Jr., has been elected a vice-president of Freeport Sulphur Company, Langbourne M. Williams, Jr., president, has announced. Mr. Norcross, who is president and general manager of Freeport's manganese mining subsidiary, will participate also in the company's expansion activities.

Mr. Norcross built the manganese ore concentration plant in Cuba and has been in charge of its operation from the beginning.

Malin to Manage Heyden Far East Sales

The Heyden Chemical Corporation has made known the appointment of N. P. Malin as manager of the far eastern sales

TRONA
BROMINE
and
U.S.P. BROMIDES
SODIUM AMMONIUM
POTASSIUM

BROMINE
TRONA
BROMIDES

ALSO . . .

REFINED POTASSIUM CHLORIDE
SODA ASH · SALTCAKE · BORAX
BORIC ACID (Technical & U.S.P.)
DESICCATED SODIUM SULFATE
and LITHIUM CONCENTRATES

ARMY E NAVY

AMERICAN POTASH
& CHEMICAL CORP.
122 East 42nd Street · New York 17, N. Y.

THE FIRST PATENT
for making
CAUSTIC POTASH
. . . was issued just 26 years before our company was founded



THE FIRST PATENT. History records its issuance by the United States Government over the signatures of George Washington, President, and Thomas Jefferson, Secretary of State, to Samuel Hopkins of Burlington, Vermont, on July 31, 1790. It covered the process of leaching wood ashes to produce potash for making soap. *Photo—Courtesy of National Life Insurance Company.*

ISCO
CAUSTIC POTASH
with its long standing record of Dependability is available from stocks at New York and our branches, in

REGULAR GRADES
FLAKE · SOLID · GRANULAR
BROKEN 88-92% and LIQUID 45-50%. *For all purposes.*

SPECIAL QUALITY
LIQUID FF 45%—Iron Free. *For Soap Makers.*
LIQUID FC 45%—Low in chloride and iron free.
For the manufacture of batteries and chemicals where extra purity is required.

ISCO
SELECTED AMERICAN
WALNUT CAUSTIC POTASH
Used for the absorption of moisture and CO_2 in the air liquefaction industry.

INNIS, SPEIDEN & COMPANY · 117 Liberty Street · NEW YORK 6
BOSTON · CHICAGO · CINCINNATI · CLEVELAND · GLOVERSVILLE · PHILADELPHIA

KEEP AN EYE ON

NAYLEE

CHEMICALS FOR INDUSTRY

•

NAYLEE

NAYPAR

CHLORINATED PARAFFIN

For Fireproof, Waterproof and Mildewproof Coatings

CHLORINATED HYDRO CARBONS

•

MURIATIC ACID

•

WETTING AGENTS

•

TUBE DRAWING COMPOUNDS

NAYLEE CHEMICAL COMPANY

Frankford Ave. & Rhawn St., Philadelphia 36, Pa.

(Warehouses from Coast to Coast)

FIGURE ON LOWER DRYING COSTS WITH DRIOCEL



THE high adsorptive capacity of this specially activated bauxite desiccant assures bone-dry gases or liquids even after repeated regeneration. This continuing efficiency keeps drying costs low. Driocel is being used successfully in the petroleum and chemical industries to dry:

1 Feeds to alkylation and other catalytic processes.

2 Natural gas and pipeline gasoline.

3 Hydrocarbon gases, hydrogen and hydrogen sulfide, etc.

4 Liquid organic chemicals.

New applications for Driocel are being discovered every day, both in the field and by our own research men. It may help you improve your own processes and cut your costs. We'll be glad to talk it over. Just write Attapulgus Clay Company (Sales Agent), 260 South Broad St., Philadelphia 1, Penna.

POROCEL CORPORATION • BAUXITE ADSORBENTS AND CATALYSTS

department. Mr. Malin was formerly the export manager of Marshall Dill in San Francisco, California. He is located in the general office of the company in New York.

Keim of W. P. B. Goes To American Potash

M. M. Keim, for the past three years industrial specialist with the Chemical Bureau of the War Production Board, has joined the staff of the American Potash Institute, where he will be in charge of the economic and statistical department. Mr. Keim will be connected with the Washington headquarters of the Institute.

Personnel Notes

ANDREW VANBEEK, manager of the Hercules-operated Radford Ordnance Works in Virginia, has been appointed assistant director of purchases for Hercules Powder Company, William J. Austin, director of purchases, has announced. He assumed his new duties in Wilmington, Del., December 1.

FRANK ST. VINCENT, who has been affiliated with the operating department of the Niagara Falls, New York, plant of the Vanadium Corporation of America, has been appointed sales engineer, Pittsburgh District.

PAUL SLAWTER, formerly director of research and promotion for CHEMICAL INDUSTRIES, has joined The House of J. Hayden Twiss as accounts executive and copy chief.

BEVERLY L. CLARK, formerly director of the analytical department of Bell Telephone Laboratories, Inc., has joined Merck & Co., Inc., as director of chemical control.

Announcement has been made of the appointment of HARVEY W. BLANKENSHIP as advertising manager of Universal Oil Products Company, Chicago. Mr Blankenship was formerly with S. C. Johnson & Son, Racine, Wis., where he served in the capacity of sales promotion manager of their industrial division.

EDWARD A. REINECK has joined the technical sales staff of the chemicals department of The Quaker Oats Company, Chicago, Illinois. He will assist in the development of new applications for furfural and its derivatives in the resins and plastics industry.

George Mann & Co., Inc., Distributors of Heavy Chemicals at Providence, R. I. and Stoneham, Massachusetts has engaged EDWARD A. WHALEN as a technical representative in charge of service.

GERALD P. NELSON has become manager of the Philadelphia Office of the J. T. Baker Chemical Co., Phillipsburg, N. J. Mr. Nelson started in the Philadelphia

territory in 1938. In 1943 he was granted a leave of absence to assume duties as a Captain in the Army Transportation Service.

LOUIS B. HOWARD has been named an assistant chief of the Department of Agriculture's Bureau of Agricultural and Industrial Chemistry, O. E. May, chief of that Bureau, has announced. Dr. Howard will participate in the planning and administration of the Bureau's research and development activities which include the four Regional Research laboratories authorized in 1938 to search for new and wider outlets for agricultural commodities. Dr. Howard will devote special attention to all aspects of the Bureau's food processing and products research.

RICHARD H. WESTFALL recently joined the staff as a research engineer at the South Charleston, West Virginia, Division of Westvaco Chlorine Products Corp. Mr. Westfall formerly had been with Hercules Powder Company.

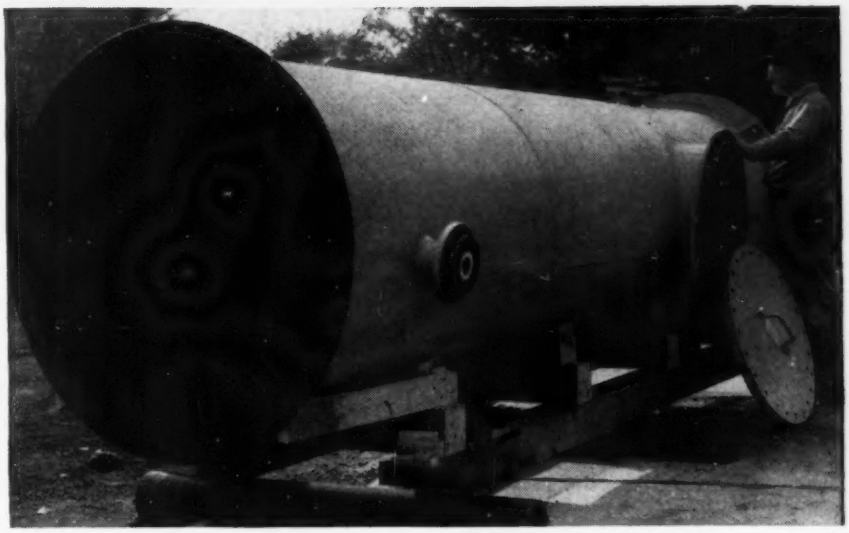
Compression Evaporator

(*Continued from page 1061*)

To operate the still it must first be heated to the operating temperature to fill the evaporator with steam. At this point the still is turned on stream for continuous operation. In the model pictured, for the production of fresh water from sea water, the feed enters by way of a triple passage heat exchanger which heats the feed by extracting heat from both the out-going condensate and the waste bottoms from the evaporator. The feed is heated to about 207° F in this exchanger and passes to the evaporator where it is mixed with a relatively large volume of brine which is circulating through the vertical tubes. Steam from this boiling brine at, or slightly above, atmospheric pressure is led from the evaporator through an entrainment separator to the rotary compressor which raises the pressure to about 3 p.s.i. gauge and the temperature at which it condenses to about 220° F, providing a temperature differential of about 9° F between the compressed steam and the boiling brine.

This differential is sufficient to transfer heat to the incoming liquid. Substantially all the latent heat is used to maintain the necessary temperature level for continuous boiling; thus, no separate condenser or cooling water is required.

A compression evaporation unit of 1,000 gallons per day capacity produces a pound of distilled water with about 20 watt hours of 68 BTU of energy input. A single-effect evaporator required about 300 watt hours or 1,020 BTU per pound of distilled water. This makes the Kleinschmidt compression evaporation system, as applied to sea water evaporation, equivalent to a 15-effect evaporator.



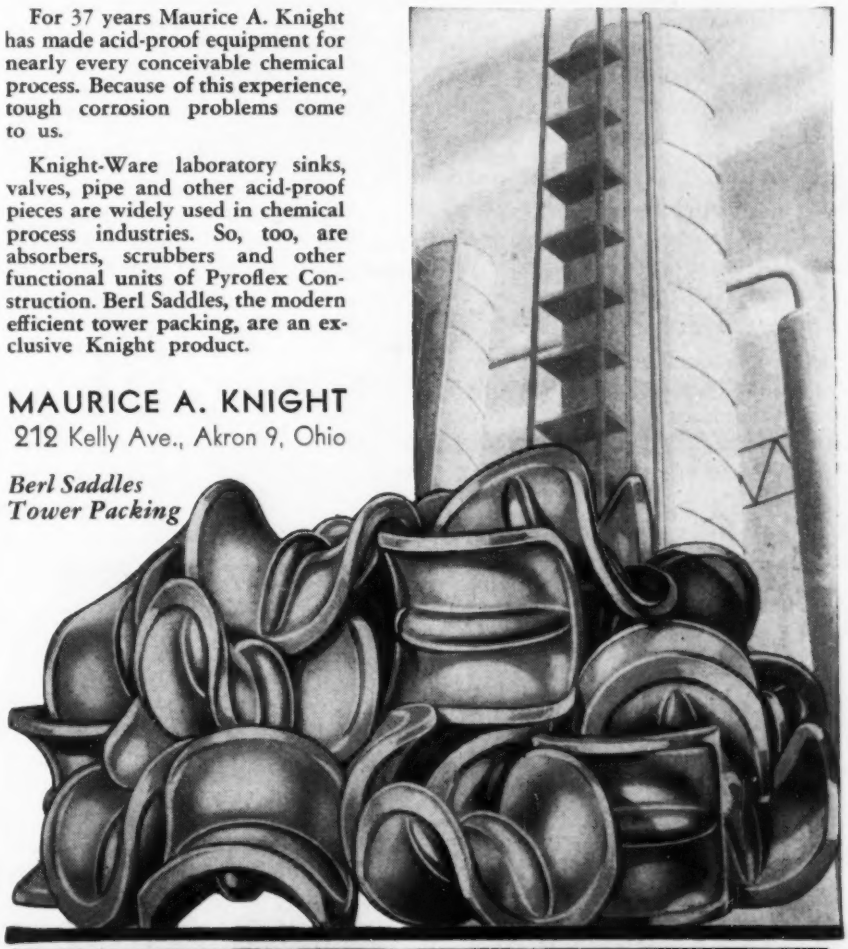
✓ Check with KNIGHT for Corrosion-Proof Chemical Equipment

For 37 years Maurice A. Knight has made acid-proof equipment for nearly every conceivable chemical process. Because of this experience, tough corrosion problems come to us.

Knight-Ware laboratory sinks, valves, pipe and other acid-proof pieces are widely used in chemical process industries. So, too, are absorbers, scrubbers and other functional units of Pyroflex Construction. Berl Saddles, the modern efficient tower packing, are an exclusive Knight product.

MAURICE A. KNIGHT
212 Kelly Ave., Akron 9, Ohio

Berl Saddles
Tower Packing



KNIGHT-WARE
CHEMICAL EQUIPMENT

CHEMICAL SPECIALTIES NEWS

G. E. Builds Plastic Plant

A new factory will be built at Anaheim, California, by the General Electric Company for the manufacture of Glyptal alkyd resins, E. L. Feininger, assistant general manager of the company's chemical department, has announced. The project, now in the designing stage, will be part of the operations of the resins and insulation materials division of the department.

The plant will consist of a process building, storage building, two pump houses, a boiler house and a gate house. The Plastics Division of the G-E Chemical Department is planning an additional plant at Anaheim for molding thermosetting and thermoplastic materials and for fabrication of laminated materials.

Fiberglas Planning Manufacture

Reconversion plans of Owens-Corning Fiberglas Corporation include creation of new facilities to manufacture superfine glass for peace-time uses, according to Harold Boeschenstein, president of the corporation. The down-like, superfine fibers, with average diameters as small as 5 one-hundred-thousandths of an inch, were used during the war for sound and heat insulation in the B-29's.

Abbott Builds Streptomycin Plant

Abbott Laboratories has broken ground for a $100,000 new building that will be used to produce streptomycin, a new drug, which, like penicillin, is produced by mold fermentation.

This is the first step in an expansion program that will involve expenditure of $1,000,000 to $1,200,000.

Acheson Appoints Pennant Oil

Pennant Oil & Grease Company, Los Angeles, with branch offices in San Francisco and Seattle, has just been appointed far-western sales agent for Acheson Colloids Corporation, Port Huron, Michigan, according to Morris W. Reynolds, Acheson's sales manager. Pennant's staff of technically trained sales engineers will service California, Oregon and Washington state users of colloidal graphite.

Dicalite Increases Staff

The sales and service engineering staff of The Dicalite Company is being enlarged rapidly, according to A. G. Frankenhoff, vice-president and general manager. Four men have recently joined the company in the Eastern Division. They are: Gordon C. Garland, who will cover the New York metropolitan area; Leo P. Newton, whose previous connections have been in the paper industry; Marshall W. Ramsey, lately with the Philadelphia Quartermaster Depot, who is at present covering territory in the Philadelphia area; and Dwight S. Masters, who is now covering territory in northern New Jersey.

McCormick and Bobalek Join Arco

Eugene W. Kanning, research director of The Arco Company, Cleveland paint manufacturers, has announced the appointment of J. J. McCormick as manager of the products development laboratory and Edward G. Bobalek as manager of the resin research department.

Mr. McCormick was formerly chief chemist of the Dibble Color Company, Detroit. Dr. Bobalek was a research chemist with the Dow Chemical Company until he joined the Arch technical staff. Two other men recently appointed to Arco's technical staff in anticipation of the opening of its new research laboratory after the first of the year are Robert C. Krueger, research chemist in the products development laboratory, and Edward G. Hart, research chemist on special problems in the resin research department.

Berry to Direct Tanner Sales

James Berry, veteran General Motors sales executive, has been appointed vice-president and treasurer of the Tanner Chemical Company, Ferndale, Michigan. Mr. Berry will direct company sales.

Starr Heads Penick Insecticide

Donald F. Starr, who has joined the research department of S. B. Penick and Co., New York, has served for 10 years in the insecticide division of the Bureau of Entomology and Plant Quarantine. In recent work there he specialized in formulating and applying DDT. The Penick Co. has purchased a research laboratory in Jersey City, in which W. G. Bywater will be in charge and Dr. Starr will be technical assistant in charge of insecticides.

Velsicol Corporation Increases Sales Staff

Velsicol Corporation recently has augmented its sales staff with three new members, two of whom, Paul Eisenhuth and J. Newton Hall, formerly held executive positions with the War Production Board. The third new member is Arthur H. Carnes, who for the past twenty years has been division sales manager with the Stanco Distributing Company, subsidiary of the Standard Oil Company of New Jersey. Mr. Carnes has become Mid-West district manager for the sale of all Velsicol Products. Mr. Eisenhuth will be in charge of sales of Velsicol's Aromatic Solvents.

Dove Joins Dodge & Olcott

Walter E. Dove, principal entomologist in charge of the Division of Insects Affecting Man and Animals, U. S. Bureau of Entomology and Plant Quarantine, has resigned that post and joined the insecticide department of Dodge and Olcott, Inc., New York.

He will organize and direct the company's entomological research, with a staff including Lawrence C. McAllister,

Short and Freuden Promoted





J. G. Short, Jr., (left) has been appointed manager of the Atlantic District of General Electric Company's Chemical Department. Since 1942 he has been assistant to the sales manager of the Plastics Divisions at Pittsfield. In the Plastics Divisions, N. A. Freuden (right) has been named sales manager of molded products. He has represented the division in Philadelphia.

CHEMICALS

1910 1945

PHARMACEUTICAL INDUSTRIAL

DRUGS, OILS, RAW MATERIALS

IMPORT & EXPORT *Merchants*

Direct Importers. Selling Agents for Producers of raw materials in foreign countries. • Distributors for Principal American Manufacturers in the domestic and foreign markets. • Buying Agents for Leading Houses in all parts of the world.

MENTHOL CRYSTALS U.S.P.
for prompt and future shipment
CAMPHOR U.S.P. Du Pont
Powder — Tablets
ARECOLINE HYDROBROMIDE, N.F.
SULFA DRUGS
HYOSCINE (Scopolamine) HYDROBROMIDE U.S.P.
now available for prompt delivery
LYCOPODIUM U.S.P.
BEESWAX U.S.P.
Yellow and Bleached
SULFUR PRECIP., U.S.P.
Sylvania Brand
OIL CAMPHOR WHITE SYNTHETIC
PAPAIN
SPERMACETI U.S.P.
HAARLEM OIL
QUINCE SEED
PREPARED CALAMINE, N.F.
LANOLIN U.S.P.
Hydrous and Anhydrous

CHAS. L. HUISKING & CO., INC.
155 VARICK STREET, NEW YORK 13, N. Y.
Chicago Office 561 E. Illinois St.
Cable Address HUISKING, NEW YORK
LONDON AGENTS: Wheeler & Huisking, Ltd., 26 Great Tower St., London, E.C. 3, England

Petroleum Sulfonates

waxes
CERESINES, WHITE AND YELLOW

white oils petrolatums
RUST PREVENTIVES

THE REFINERY OF CONTROLLED SPECIALIZATION
SHERWOOD
REFINING COMPANY, INC.
ENGLEWOOD, N. J. REFINERY, WARREN, PA.

Edw. S. Burke
J. F. Hollywood

AMINOPHYLLINE U.S.P.
THEOPHYLLINE U.S.P.
CHINIOFON (YATREN) U.S.P.
IODOXYQUINOLIN SULPHONIC ACID
ETHYL CYANO ACETATE
8-HYDROXYQUINOLIN
SODIUM BENZOATE U.S.P.
ACID BENZOIC U.S.P.

EDW. S. BURKE
ESTABLISHED 1917
65 PINE STREET, NEW YORK 5, N. Y.
Representing:
CARUS CHEMICAL CO., INC. BENZOL PRODUCTS CO.

EXTREMELY LOW POUR POINTS

Technical White Oils

Viscosities Ranging 50 to 90 Seconds at 100° F.

PETROLEM SULFONATES
PETROLEUM WAXES
PETROLATUMS

OIL STATES PETROLEUM CO., Inc.
233 Broadway, New York 7, N. Y. Plant: Bayonne, N. J.

ESTABLISHED 1880

WM. S. GRAY & CO.
342 MADISON AVENUE, NEW YORK
Murray Hill 2-3100 *Cable: Graylime*

SODIUM BENZOATE U.S.P.
STANDARD AND POWDERED

BENZALDEHYDE N.F. F.F.C.
TECHNICAL

Local Stocks Manufactured by TENNESSEE PRODUCTS CORP. Plant at Chattanooga, Tenn.

Jr., Herman O. Schroeder and Merritt P. Sarles.

Bri-Test Moves to Newark

Bri-Test Products Corporation, manufacturers and packers of soaps, waxes, polishes, and cleaners, will move its manufacturing facilities on December 1 to a new plant at 109 Avenue L, Newark, N. J., from the Bronx plant at 800-814 E. 136th Street.

VELSICOL CORPORATION, Chicago, manufacturers of petroleum chemical derivatives, has opened a New York office in the Park-Murray Building, 9-11 Park Place, New York City. This office, which will be Velsicol's eastern sales and service headquarters, is under the direction of J. Newton Hall. Also announced by the company is the opening of East Central headquarters at 1900 Euclid Avenue, Cleveland, and the appointment of A. C. Conor as head of the sale of resins, insecticides and aromatic solvents in this territory.

After more than three years of service with the American Air Force's 51st Fighter Group, MAJOR CHARLES C. BRYAN is back with the sales division of Fritzsche Brothers, Inc.

ALBERT J. CAPALBO has joined the staff of Plasticote Company, Paterson, N. J., in the capacity of chief chemist in charge of production.

ANTHONY M. SCHWARTZ is a new member of the staff of Milton Harris Associates, Washington, D. C. Dr. Schwartz formerly was director of research of the Alrose Chemical Co., Providence, R. I. and prior to that was associated with the Visking Corp., Chicago, Ill., and National Aniline Division of the Allied Chemical & Dye Corp.

Quaker Chemical Products Corporation, Conshohocken, Penna., manufacturers of special chemicals for textiles, has announced that JAMES BOSWORTH IRVINE has joined the staff of research chemists. Mr. Irvine has been engaged in analytical and research work in the laboratories of The Hercules Powder Co., The O. F. Zurn Co. and Collins and Aikman Corp.

D. A. Walker, vice-president in charge of the foreign division of William R. Warner & Co., Inc., and all its associated companies, has announced the appointment of JAMES S. POTTER as assistant manager of the division. Mr. Potter joined the organization in 1928 as manager of the company's branch in Cuba.

WAR REGULATIONS SUMMARY

INSTRUMENTS, SCIENTIFIC — (OPA) Amendment 6 to Supplementary Order 129 exempts additional scientific instruments and laboratory apparatus from price control as of November 20.

LEATHER, SIMULATED—(OPA) Supplementary Service Regulation 63 to Revised MPR 165 establishes specific ceiling prices for services of applying certain finishes to coated fabrics to simulate leather, effective October 29.

METALS, CERTAIN — (OPA) Nickel, monel, stainless steel, and aluminum scrap; secondary aluminum ingot; aluminum and magnesium mill products; and mica were suspended from price control November 20 by Amendment 6 to Supplementary Order 129.

METHANOL — (WPB) Revocation of Schedule 72 of Order M-300 removes all restrictions on the production and distribution of methanol, effective October 31.

PARAFFIN WAX—(WPB) Paraffin wax is one of ten products placed under a preference rating system October 22 by amendment to Priorities Regulation 3.

Quality Chemicals for over 50 years

PHELPS DODGE REFINING CORPORATION
NICHOLS TRIANGLE BRAND
REG. U. S. PAT. OFF.
CHEMICALS
40 WALL ST. NEW YORK

COPPER SULPHATE
NICKEL SULPHATE
COPPER OXIDE

CROTON *Potassium Nitrate*

Sodium Nitrate
Sodium Nitrite
Borax
Boric Acid
Potassium Chloride
Caustic Soda
Soda Ash
Sodium Perborate
Curosalt (for curing meat)
Welding Fluxes
Flameproofing compounds
Special Products Used in Refining and Casting of Magnesium and Aluminum

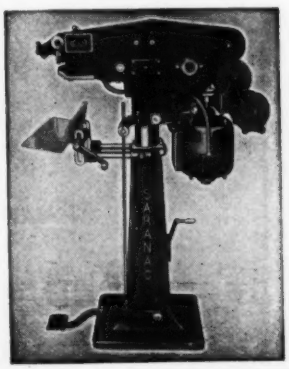
Manufacturers and Distributors of Industrial Chemicals Since 1836

CROTON CHEMICAL CORPORATION
114 Liberty Street, New York 6, N. Y.

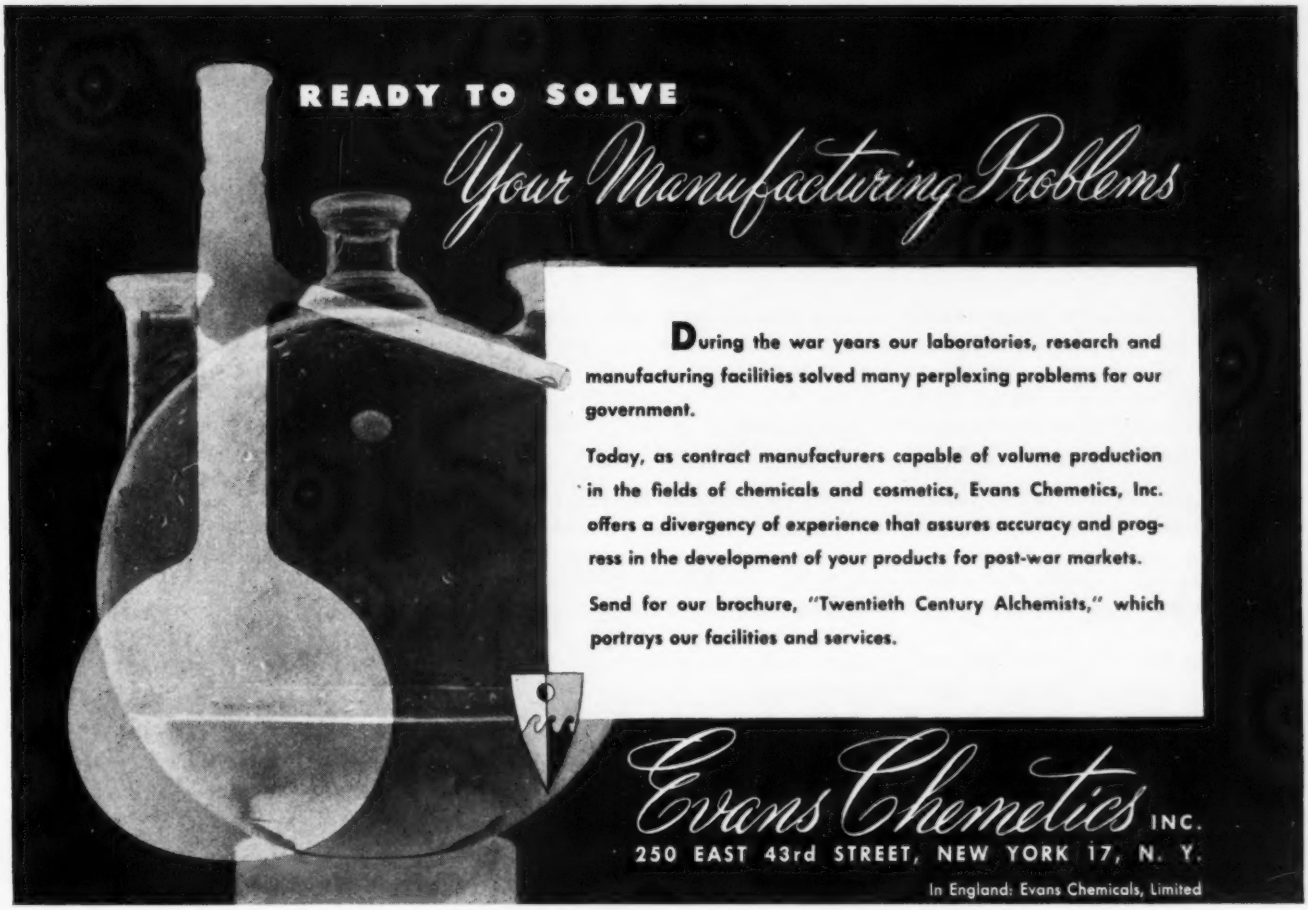
FULL MEASURE IN EVERY BAG
With the Sift-Proof Fold

Saranac Model D Bag Sealers, closing packages at one stroke with a tight reverse double fold, make the seal *the strongest part of the bag.* Production — 600 to 800 closures an hour — is fast and economical.

WRITE FOR BULLETIN C1-8



SARANAC MACHINE CO.
BENTON HARBOR MICHIGAN



HIGH MELTING POINT

ARISTOWAX

FULLY REFINED PARAFFIN WAX

PRODUCT OF

THE UNION OIL COMPANY OF CALIFORNIA

DISTRIBUTORS

PETROLEUM SPECIALTIES, INC.

400 MADISON AVENUE NEW YORK 17, N. Y.



PENACOL

RESORCIN

TECHNICAL U. S. P.

CATECHOL

C. P. CRYSTALS RESUBLIMED

•

Samples and prices on request

PENNSYLVANIA COAL PRODUCTS COMPANY

PETROLIA • PENNSYLVANIA

Cable: PENACOL Phone: Bruin, Pa., 2641

CANADIAN NEWS

by W. A. JORDAN

Report Hits "Chemical Cartel"

A REPORT tabled in the House of Commons last month by the Combines Investigation Committee recommends the establishment of a United Nations organization to curb cartels "to prevent private business organized as cartels from supplanting government in the establishment of commercial policies" and outlines some of the monopolistic policies allegedly practiced by the chemical industry.

The Committee concedes that some of the results of cartel agreements might be regarded as beneficial to the country, in the provision of stabilized, guaranteed markets, but contends that a government organization should be created "to assist in maintaining favorable conditions for free enterprise through preventive or punitive proceedings, and to effect international collaboration to check the abuse of cartelization." It is possible that such legislation may be enacted early next year to support the recommendations of the report.

Major charges made by the Committee, as far as the chemical industry is concerned, are that Canadian Industries, Ltd., was created by Imperial Chemical Industries and du Pont to serve the Canadian market, and was not permitted to export even when such trade was encouraged under preferential tariffs between Canada and other countries. Parenthetically, no mention was made in the report of the I. C. I. and du Pont research development benefits granted to C. I. L. in the form of cost-free patents, which should C. I. L. engage in export trade would logically be chargeable against Canadian production costs.

Other allegations listed include the statements that cartel agreements with European companies assisted U. S. producers to maintain the price of sulfur imported into Canada at $17.00 a ton; that world-wide control of potash, superphosphate, and nitrogen prices existed; that titanium pigment imports were governed by a world combination; and that exports of acetic acid and radium were cartel-governed to relieve domestic producers from outside competition in the Canadian market and to provide for their participation in export markets on terms acceptable to foreign producers.

New Holding Company Purchases Chemical Firms

A significant industrial development in Canada is the recent formation of a new company, known as Combined Enterprises, Ltd., Montreal, patterned after the huge American Home Products Corp. of the U. S. A. The company will be engaged through subsidiaries in the manufacture and distribution of food, drug, and household products.

Already the new organization has purchased all the outstanding stock of Stuart Bros., Ltd., Montreal, which in turn owns control of Snap Co., Ltd. The former company manufactures and distributes throughout Canada terpeneless essential oils and flavor concentrates, whereas Snap Co. is a leading manufacturer of hand cleaners and other cleaning and polishing specialties. Regarded as a probable development in the near future is the acquisition by Combined Enterprises of pharmaceutical or drug manufacturing units.

Chief organizer of the new enterprise is W. H. Wallace, one of the original founders of Ayerst, McKenna and Harrison, Ltd., and until recently an A.H.P. executive stationed in New York. Mr. Wallace has assumed the presidency of both Stuart Bros. and Snap Co., and is board chairman of the holding company.

Oxygen Filling Station

Plans for the immediate construction of an oxygen filling station adjoining the acetylene-generating plant of its affiliate, Prest-O-Lite Co. of Canada, Ltd., at Winnipeg, have been announced by Dominion Oxygen Co., Ltd., a unit of Union Carbide and Carbon Corporation.

At the present time Dominion Oxygen has oxygen plants located at Welland, Sault Ste. Marie, Toronto, Montreal, and Quebec, and the affiliated Prest-O-Lite of Canada, Ltd., has acetylene-generating or charging plants at Merriton, Ont., and Montreal.

Noxzema Expands

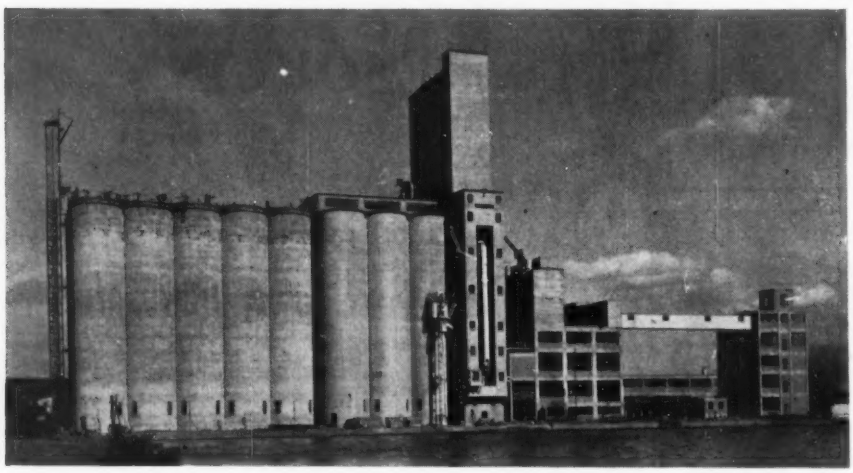
Noxzema Chemical Co. of Canada, Ltd., Toronto, subsidiary of the Baltimore pharmaceutical organization of the same name, has purchased a three-acre suburban Toronto property as a site for the location of a new, enlarged plant. As yet, according to President J. Marvin Shaw, detailed plans have not been finalized, but it is not anticipated that actual construction of the new unit will begin until late next year when the building supplies situation is expected to ease.

Established in Canada 14 years ago, Noxzema has experienced steady growth, with business quadrupling in the past four years. Output of the proposed plant will be mainly for the domestic market, although consideration will be given to Empire export possibilities in the right of existing tariffs, and several new cosmetic-pharmaceutical products will be added to the company's line.

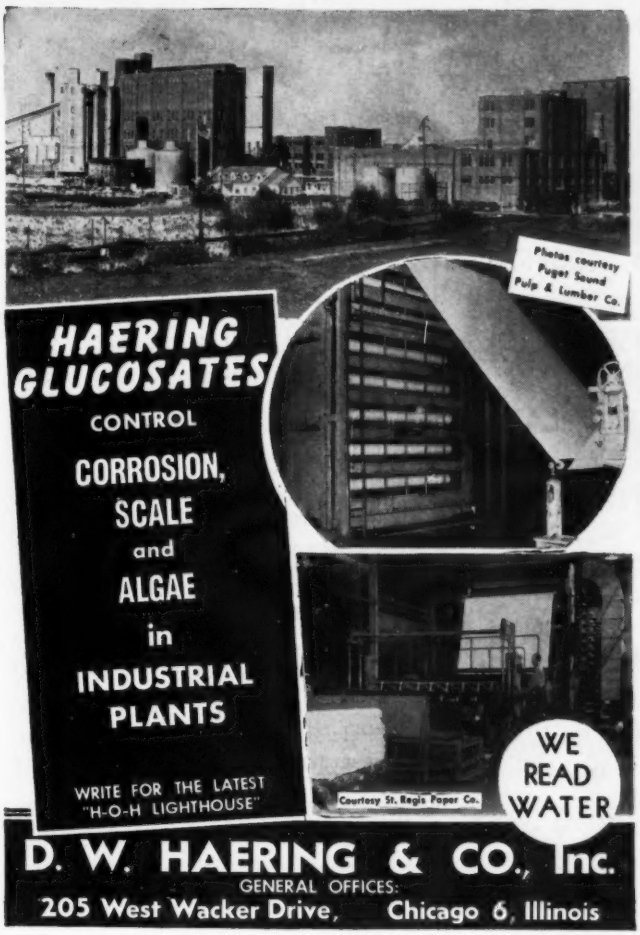
Lead Oxide Plant

Canada Metal Co., Ltd., Toronto, subsidiary of National Lead Corporation, has completed plans for the construction of a $300,000 plant for the manufacture of lead oxides, primarily for sale to storage bat-

New Oil Expressing Plant of Victory Mills Ltd.



The recently completed $2,500,000 oil expressing plant of Victory Mills Ltd. is located on the Toronto waterfront. It will operate mainly on soybeans, but is capable of processing linseed, copra and other oil-bearing materials. Most of the soybeans are being imported at present but it is hoped to encourage augmented domestic production. The unit is the largest of its kind in Canada.



HAERING GLUCOSATES

CONTROL

CORROSION, SCALE and ALGAE in INDUSTRIAL PLANTS

WRITE FOR THE LATEST "H-O-H LIGHTHOUSE"

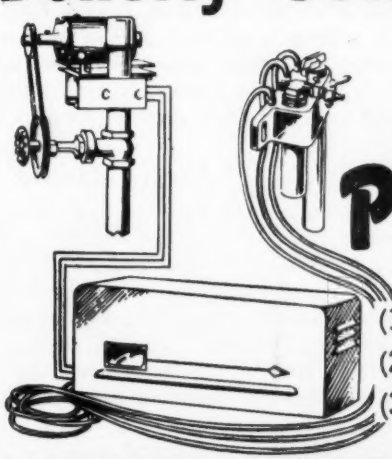
WE READ WATER

D. W. HAERING & CO., Inc.

GENERAL OFFICES:

205 West Wacker Drive, Chicago 6, Illinois

Density Controller for PULPS



(1) Dilution Controller
(2) Control Mechanism
(3) Pressure Bells

ELIMINATES DENSITY VARIABLES

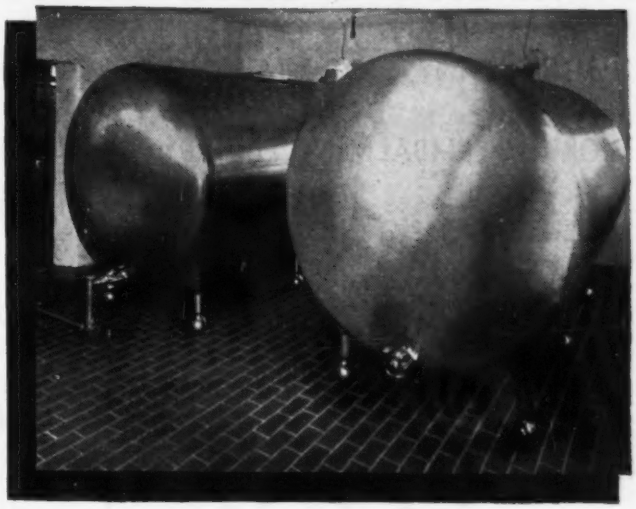
Massco - Adams AUTOMATIC Density Controller, first used in ore classification, now has many applications in non-metallic and chemical plants — including potash, phosphate plants, washing coal, etc. Maintains **visual** control by motor - operated regulation of dilutant supply valve. Available with standard chart recorder or with arm and weights for SINK AND FLOAT process. Widely optional location. In writing please state your problem. **Send for Descriptive Folder.**

DENVER
SALT LAKE CITY
EL PASO
SAN FRANCISCO
NEW YORK CITY

The Mine & Smelter Supply Co.

CANADIAN VICKERS, LTD. Montreal

W. R. JUDSON Santiago, Lima



The John Van Range Co.

Specializing in Fabrication of

STAINLESS STEEL EQUIPMENT

for the

Chemical and Processing Industries

Also manufacturers of Monel Metal, Aluminum, Copper, Zinc and Steel Equipment. Founded in 1847, our Experience should be invaluable to Manufacturing Chemists, Food, Dairy, Drug and Textile Processing Industries.

CONSULT US ON YOUR PROBLEMS

SEND US YOUR INQUIRIES

The John Van Range Co.

EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD

Division of The Edwards Manufacturing Co.

307-347 CULVERT ST. CINCINNATI 2, OHIO

BATH PRODUCTS • CLEANING FLUIDS and NAPHTHAS
DISINFECTANTS • DRAWING COMPOUNDS for METAL
WORK • EMBALMING FLUIDS • FLY SPRAYS • FUEL
and LUBRICATING OILS • GUM and PASTE • HOSPITAL
DEODORANTS • HOUSEHOLD SPRAYS • INSECTICIDES
JANITORS' SUPPLIES • LABORATORY SUPPLIES • LATEX
LEATHER • LINOLEUM • METAL CLEANING COM-
POUNDS • NAPHTHENE • OILS and GREASES • PAINTS
and LACQUERS • PARA BLOCKS • PENETRATING and
CUTTING OILS • PHOTO ENGRAVING SUPPLIES • PLAS-
TICS • PRESS ROOM SPECIALTIES • PRINTING INKS
RUBBER • SANITARY SUPPLIES • SOAPS • STARCH
STOCK or CABLE SPRAYS • SULPHONATED OIL PROD-
UCTS • TEXTILE CHEMICALS • WAXES • and OTHERS

TECHNICAL ODORANTS



WHATEVER your product . . . whatever the odor . . . if it is strong, repellent or offensive . . . if it retards sales or causes discomfort or lowered efficiency among your employees during process of manufacture . . . then it's time you consulted us! As pioneers in the field of technical odorants we have developed effective, low-cost deodorizing or neutralizing compounds for scores of individual manufacturers and top-rank industries. Chances are we can supply from stock an efficient, time-tested modifier that will immediately solve the odor problem now confronting you. Write us in detail concerning your needs.

FRITZSCHE BROTHERS, Inc.
PORT AUTHORITY COMMERCE BLDG., 76 NINTH AVENUE, NEW YORK 11, N.Y.
BRANCH STOCKS
BOSTON CHICAGO LOS ANGELES ST. LOUIS TORONTO, CANADA MEXICO, D. F.
FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

WRITE FOR DETAILS

tery manufacturers. Initial production is scheduled for mid-1946, according to President James A. Taylor.

Butyl Crotonate

Shawinigan Chemicals, Ltd., Montreal, has begun pilot plant manufacture of butyl crotonate, based on its own synthetically produced crotonic acid and butanol, and is offering limited quantities of this high-boiling cellulose ester lacquer solvent.

Butyl crotonate, as produced commercially, is described as a colorless liquid with a pleasant persistent odor, soluble in alcohol and ether, but only slightly in water. The specifications of Shawinigan's technical grade are listed as follows:

Butyl crotonate	98—99 per cent
Acidity (as crotonic)	0.5 per cent max.
Boiling Range	175°—182° C
Color	Water-white
Water, chlorides, iron, sulfate	None
Specific Gravity (20° C.)	0.901—0.903

The ester is packed in 1, 5, 9, 40, and 400 lb. containers.

Chemical Patents Increase

The annual report of the Commissioner of Patents reveals that the volume of business transacted by the Dominion Patent Office during the last fiscal year was the heaviest since 1936, and, customarily, applications covering chemicals and chemical processes formed the largest single category. Actually, chemical patents constituted slightly more than 20 per cent of the total, with synthetic resins the subject of many applications, and dyestuffs, petroleum chemicals, and synthetic rubbers as other main topics.

Of considerable significance is the fact that the U. S. A. led the field in the number of patent applications filed, holding a three-to-one ratio over other patentees. Countries other than Canada, U. S. A., or the Empire, accounted for only 4 per cent of the patents granted.

Eagle-Picher Enters Canada

The Eagle-Picher Co., Cincinnati, Ohio, has entered the Canadian market with the purchase of a substantial portion of the common stock shares of Canada's pioneer white lead producer, MacArthur, Irwin, Ltd., Montreal. According to MacArthur, Irwin's president, John Irwin, the Canadian organization plans immediate expansion in its lead corroding activities in view of the capital made available by Eagle-Picher, and the utilization of the latter's experience in the manufacture and distribution of lead pigments.

Fundamentally, it is planned to create an organization in Canada similar in many respects to that of Eagle-Picher in the U. S. A., with immediate increasing of white lead tonnage and extension into litharge and red lead production.

Hitherto, although Canada has been basically self-sufficient as far as white lead is concerned, it has had to rely on the U. S. A. for imports of some $200,000 of litharge annually, with imports of red

R.W. Greeff & Co. Inc. RWG New York, U.S.A.

INDUSTRIAL AND PHARMACEUTICAL *Chemicals*

PHOSPHATE TRICRESYL

Now fully available for prompt shipment without allocation.

Manufactured by
Montrose Chemical Company
Lister Avenue, Newark, N. J.

R.W. GREEFF & CO.
10 ROCKEFELLER PLAZA — NEW YORK CITY
TRIBUNE TOWER — CHICAGO, ILL.

ETHYL TRIFLUOROACETATE

We are now able to offer this interesting chemical in 100 g., 1000 g., and 5000 g. lots. Write for prices. Six other flourides in stock.

Columbia Organic Chemicals Co., Inc.
Office: 600 Capitol Place
Plant: Garner's Ferry Road
Columbia, S. C.

HEEKIN

LITHOGRAPHED CANS WITH HARMONIZED COLORS



ANY SIZE — ANY COLOR—ANY SHAPE ANY QUANTITY . . . After the War, of Course

THE HEEKIN CAN CO.
CINCINNATI, OHIO

AHCO PRODUCTS

METHYL CELLOSOLVE STEARATE

METHYL CELLOSOLVE STEARATE is a synthetic ester and is used as a plasticizer for cellulose derivatives and for resins. The following data may suggest other uses.

Chemical formula	$C_{17}H_{35}COOCH_2CH_2OCH_3$
Molecular weight	342
Color (platinum cobalt scale)	175
Melting point	64° to 70°F
Flash point	378°F
Acidity, less than 1.0 mg. KOH per gram ester	

★

BUTYL STEARATE

BUTYL STEARATE is a synthetic ester and is used as a plasticizer in cellulose and polyvinyl derivatives, also for cosmetics and for paper coating. The following data may suggest other uses.

Chemical formula	$C_{17}H_{35}COOC_4H_9$
Molecular weight	341
Color (platinum cobalt scale)	130
Melting point	64° to 70°F
Flash point	358°F
Acidity, less than 1.0 mg. KOH per gram ester	
Saponification number,	171-179 mg. KOH per gram ester

ARNOLD-HOFFMAN & CO., INC.
Manufacturing Chemists
PROVIDENCE, R. I.
Established in 1815
Plants at Dighton, Mass. and Charlotte, N. C.
NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE





K.O.'d by DUGAS in 37 Seconds!

● In a test conducted for the observation of Underwriters' Laboratories and Factory Mutual Laboratories, 500 gallons of 300 degree F. flash point paraffin oil were "touched off."

This "transil oil" fire was large (20 ft. x 20 ft. area). After burning for 2 minutes, a DUGAS 150-A Wheeled Extinguisher equipped with the *new dual-stream nozzle* was brought into action.

In a mere 37 seconds, the inferno was extinguished.

NEW NOZZLE STEPS UP EFFECTIVENESS



NEW DUAL-STREAM NOZZLE deals effectively with spill fires and fires difficult to reach because of height or obstructions. Designed for use with DUGAS Wheeled Extinguishers, the new Dual-Stream Nozzle greatly increases fire-fighting range and effectiveness. A turn of the handle gives a *straight* stream with a range of 45 feet—or a *fan* stream with a range of 15 feet.

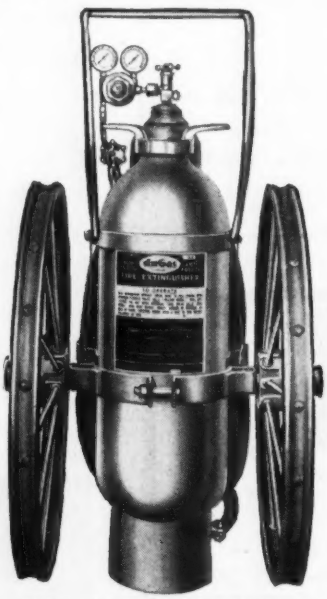
QUICK FACTS ABOUT DUGAS DRY CHEMICAL

1. For extra-hazardous fires involving flammable gases, liquids, greases or electrical equipment.
2. Not an electrical conductor.
3. Non-toxic, non-corrosive, non-abrasive.
4. Not affected by extreme cold or heat.

Write today for complete information regarding DUGAS Wheeled Extinguishers with the new Dual-Stream Nozzle... and DUGAS Hand Extinguishers.

AN ANSUL PRODUCT
duGas
THE MASTER OF FLAME

Approved by Underwriters' Laboratories, Factory Mutual Laboratories



DUGAS 150-A WHEELED EXTINGUISHER

ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN
DUGAS DIVISION

lead from the U. S. A. totalling a sundry $15,000 per annum.

Compounding Plant For Eli Lilly

Eli Lilly & Co. (Canada), Ltd., subsidiary of Eli Lilly & Co., Inc., Indianapolis, is constructing a 40,000 square foot plant on a recently acquired 12-acre Toronto site. Established in Canada in 1939 the Canadian organization heretofore has merely packaged and distributed the pharmaceutical and biological products of the parent organization.

Present plans, however, call for the compounding of a number of the Lilly preparations for prescription dispensation, with consideration being accorded to eventual manufacture of some of the component fine chemicals.

The new facilities, which will be in operation by April, will permit a 150 per cent increase in output of the company's products, to be marketed almost exclusively in Canada.

New Rayon Producer

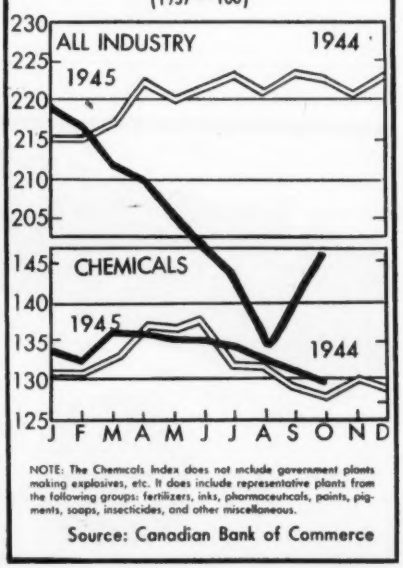
That rayon is destined to make substantial inroads on the cotton domain in Canada, as noted by this column some months ago, is further emphasized with the announcement this month that Dominion Textile Co., Ltd., Canada's major cotton weavers, plans the manufacture of rayon fabrics through a newly created subsidiary.

The organization being formed will be known as Dominion Burlington Mills, Ltd., and will be jointly owned by Dominion Textile and Burlington Mills Corporation, Greensboro, N. C.

Currently the two Canadian rayon producers, Celanese Co., Ltd., manufacturers of acetate rayons, and Courtaulds, Ltd., producers of viscose rayon, are expanding their facilities with additional capital investments exceeding $3,000,000.

CANADIAN CHEMICAL ACTIVITY

(1937 = 100)



NOTE: The Chemicals Index does not include government plants making explosives, etc. It does include representative plants from the following groups: fertilizers, inks, pharmaceuticals, paints, pigments, soaps, insecticides, and other miscellaneous.

Source: Canadian Bank of Commerce

War Exports of Chemicals

This country shipped substantial quantities of chemicals and drugs to our allies under lend-lease, and maintained commercial exports to other countries. Shortages of shipping and materials reduced the totals in 1944:

LEND-LEASE AND TOTAL EXPORTS OF CHEMICALS AND ALLIED PRODUCTS
(Millions of Dollars)

Year	*Lend-Lease*[1]	*Total Exports*
1941	15	333
1942	150	387
1943	282	409
1944	240	517
6 mos., 1945	90	...
Total	778	...

[1] Includes explosives.

Included in the chemicals allocated among the United States, the British Empire, and the United Nations by the Combined Raw Materials Board were pyrethrum, rotenone, shellac, copper sulfate, gum copal, bones, hide glue-stock, casein, cotton linters, cinchona bark, and rosin. These allocations were often accompanied by public purchase and coordinated buying arrangements and price understandings. In some cases materials were obtained under reverse lend-lease. WPB was represented on the Combined Committee on Fertilizers of CRMB and the Combined Food Board which made world allocations of fertilizers, and on the Medical Supplies Committee of CPRB which allocated scarce drugs.

Chemicals made available from abroad through public purchase programs included benzene, cresol, and naphthalene from the United Kingdom; pyrethrum, rotenone and cinchona bark from South America; shellac from India, and nitrates from Chile.

Zinc Industry Less Active

During August the zinc industry showed a general over-all gain in stocks, with decreases in production, shipments, and receipts, according to the Bureau of Mines, United States Department of the Interior.

Stocks of zinc oxide, zinc dust and redistilled slab zinc continued to increase. With the exception of zinc dust stocks the gain has been continuous since April 1945.

Production of zinc oxide, zinc dust and redistilled slab zinc as well as the daily rate of output, was less than in July.

Consumption of slab zinc showed a slight increase in August as moderate gains at brass mills and zinc-based alloy plants more than balanced slight decreases in the other industry groups.

Receipts of slab zinc at consumers' plants continued to decrease. Receipts at mills showed a 14-percent gain.

Sulfur Production Sets Record

In August, 1945, the month in which the war ended, more native sulfur was produced in the United States than in any previous month, according to the Bureau of Mines, United States Department of the Interior. The production rate was nearly 30 per cent higher than the average of 1944. The tonnage shipped from

PRODUCTION, MINE SHIPMENTS, APPARENT SALES, AND PRODUCERS' STOCKS OF NATIVE SULFUR IN THE UNITED STATES IN SELECTED PERIODS, 1944-45, IN LONG TONS

Period	*Production*	*Mine shipments*	*Apparent sales**	*Producers' stocks***
August, 1945	346,349	350,961	333,395	3,711,311
July, 1945	313,391	457,970	391,772	3,698,357
August, 1944	306,146	297,168	299,483	4,161,012
Monthly Average, 1944	268,180	293,249	298,338	.....

* Calculated from production and change in stocks during the period.
** Producers' stocks at mines, in transit, and in warehouses at end of period.

NATURAL, SYNTHETIC, AND RECLAIMED RUBBER SUPPLY AND DEMAND[1]

Long Tons	*New Supply*	*Consumption*	*Exports*	*Ending Stocks*
Natural Rubber and Latex				
1941	1,029,007	775,000	5,376	527,708[4]
1942	282,653	376,791	10,856	422,714
1943	55,329	317,634	20,815	139,594
1944	107,834	144,113	9,665	93,650
GR-S (Butadiene-Styrene Type)				
1942	3,721	2,579	222	1,050
1943	182,259	131,977	20,357	30,975
1944	679,949	495,552	99,242	116,130
GR-M (Neoprene Type)				
1942	8,956	6,833	1,037	1,786
1943	33,603	26,205	2,769	6,415
1944	56,660	46,243	5,093	11,739
GR-I (Butyl Type)				
1943	1,373	304	40	1,033
1944	20,252	10,763	630	9,892
GR-A (Butadiene-Acrylonitrile Type)				
1942	9,734	8,217	160	1,772
1943	14,487	12,405	709	3,145
1944	16,812	14,112	679	5,166
Total Synthetics[2]				
1942	22,411	17,629	1,419	4,608
1943	231,722	170,891	23,875	41,568
1944	773,673	566,670	105,644	142,927
Reclaimed Rubber				
1941	274,202	251,231	13,851	41,750
1942	286,007	254,820	30,405	42,532
1943	304,419	285,072	15,678	46,201
1944	260,631	251,200	11,800	43,832
Grand Totals				
1941[3]	1,303,209	1,026,231	19,227	569,458
1942	591,071	649,240	42,680	469,854
1943	591,470	773,597	60,368	227,363
1944	1,142,138	961,983	127,109	280,409

Notes:
[1] Data from miscellaneous government sources (some figures partly estimated).
[2] Excludes Thiokol type rubber.
[3] Synthetic rubber production very small; excluded from totals.
[4] Natural rubber stocks at end of 1941 are usually carried at 533,344 long tons; figure changed to 527,708 long tons in order to balance this statement.

PRODUCTION OF SYNTHETIC RUBBER IN U. S. GOVERNMENT PLANTS

	1942	*1943*	*1944*	*Estimated 1945*	*Estimated 1946*
GR-S (Butadiene-Styrene Type)					
January	....	640	40,107	.....	.....
February	....	617	44,026	.....	.....
March	....	1,792	53,676	.....	.....
April	....	3,137	56,468	.....	.....
May	20	5,682	56,501	.....	.....
June	162	9,868	62,823	.....	.....
July	219	13,060	60,150	.....	.....
August	235	19,412	56,877	.....	.....
September	253	24,074	53,991	.....	.....
October	398	29,694	57,323	.....	.....
November	359	37,002	61,206	.....	.....
December	595	36,492	65,692	.....	.....
	2,241	181,470	668,840	881,000	1,054,000
GR-M (Neoprene)	1,350	24,611	47,302	55,000	56,000
GR-I (Butyl)	0	1,783[1]	18,890	53,000	66,000
GR-A (Acrylonitrile Type)	0	0	2,060	0	0
GR-P (Thiokol)	8	750	0	0	0
Total All Synthetics[2]	3,599	208,614	737,092	989,000	1,176,000

Notes:
[1] Includes 408 tons of polyisobutylene.
[2] In addition, plants operated for Polymer Corporation, a Canadian Government Corporation, produced in 1943, 2,522 long tons GR-S and in 1944 32,060 long tons GR-S and 2,767 long tons GR-I.

the mines declined from the record set in July, 1945, but it was 18 per cent greater than was moved in August, 1944.

Since December, 1944, stockpiles have gradually diminished, but in August production finally overtook sales and producers' stocks increased 12,954 long tons.

Lead Output Down in August

Lead production (in terms of recoverable metal) from domestic mines was 30,009 short tons in August 1945, a decrease of 278 tons from the July output, according to preliminary estimates of the Bureau of Mines, United States Department of the Interior. The average daily production in August was 968 tons, compared with 977 tons in July.

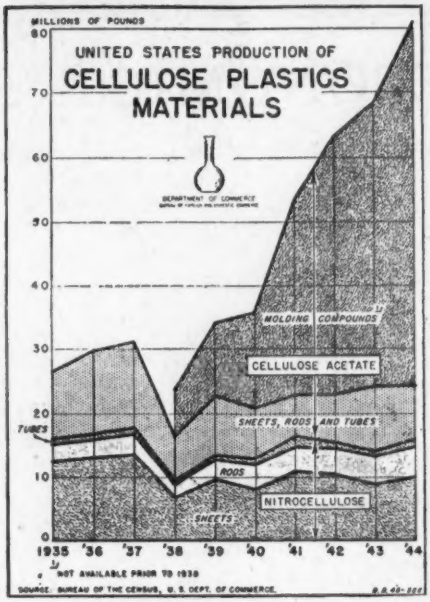
A marked decrease in the output of lead at the New Jersey Zinc Co. mine at Austinville, Va., was the principal cause of a net decline of 133 tons in the lead production of the Eastern states in August. The lead output of the Central states decreased 484 tons largely due to a smaller production of lead concentrates in the Tri-State district in August.

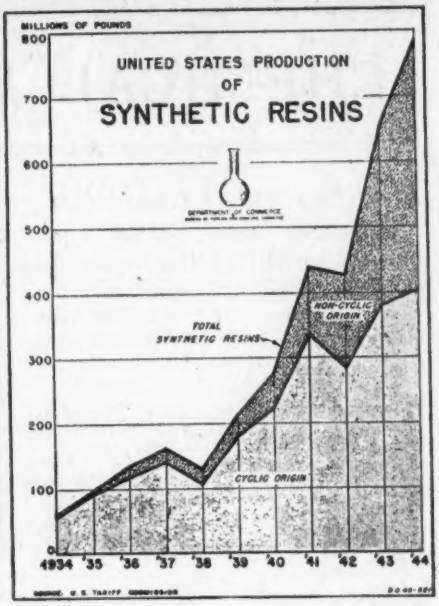
The output of lead in the Western States increased 339 tons in August, ending the downward trend in production which began in April 1945. The August output, however, continued to be lower than the average monthly production of any year since 1934 (average monthly production, 14,112 tons). Idaho lead output increased 150 tons in August but was 1,086 tons below the average monthly production (6,236 tons) for the first six months of 1945. Lead output in Utah increased 198 tons. Although Arizona production declined 185 tons, it continued to exceed the average of the first six months of 1945. Lead production from the mines in Colorado remained approximately the same in August as compared with July. The August output of lead in Washington doubled that of July. The increase was due to the gain in production at the property of the American Zinc, Lead & Smelting Co. in the Metaline district. Production of the other Western states remained approximately the same as in July.

Phosphate Output Rises Slightly

Total mine production of phosphate rock in the first half of 1945, according to reports of producers to the Bureau of Mines, United States Department of the Interior, was 2,773,894 long tons compared to 2,581,561 tons in the corresponding period of 1944. Phosphate rock sold or used in the first half of 1945, 2,629,669 tons, was slightly less than the corresponding period of 1944; the value, $10,567,755, was about $385,000 greater. The average value of the phosphate rock sold or used increased from $3.80 in the first half of 1944 to $4.02 in the similar period of 1945, increases being shown in nearly all classes of rock. Total stocks in producers' hands increased.

In the first half of 1944, phosphate rock was mined in Florida, Tennessee, Idaho, and Montana, and apatite in Virginia. Florida was the leading shipper as usual, its marketed production being nearly three times that of its nearest competitor, Tennessee. Shipments of Florida soft rock increased, but those of land pebbles and hard rock declined, the latter greatly. The rock increased, but that of soft rock declined. The total value of shipments of land pebble in the first six months of 1945 was greater than in the similar period of 1944, but those of soft rock and hard rock were less. The quantity of Tennessee rock sold or used in the first half of 1945 was considerably greater than in the corresponding period of 1944, and there was a considerable increase in the total value. Idaho showed an increase in the quantity of phosphate rock sold or used in the first six months of 1945 over the January-to-June period of 1944. Both average and total values also increased. Montana shipments in the first six months of 1945 were much less than those of the corresponding period of 1944, with decreases in total and average values.





Feldspar Demand Heavy

Stimulated by the active market for glass and glass products, a heavy demand from the armed forces for chinaware, dinnerware and sanitary pottery, and despite labor shortages, the outputs of both crude and ground feldspar in 1944 increased compared with 1943 figures, according to reports from producers compiled by the Bureau of Mines, United States Department of the Interior. In tonnage, each was only 3 per cent under the record year 1941. Total realization for crude spar sold in 1944 was the highest on record, 10 per cent above 1943, the previous high. The total value of ground feldspar in 1944 also established a new record, and was 2 per cent over 1941, the former peak year in realization for ground spar. Production of crude feldspar in North Carolina in 1944, aided to some extent by the active hunt for mica, surpassed by 10 per cent its largest previous output (in 1943).

The increased activity in the feldspar market in 1944 compares favorably with a 7 per cent over-all increase in the value of glass products. Glass container production was 7 per cent higher than in 1943, and shipments about 1½ per cent greater with an accompanying jump of 15 per cent in inventories at the end of 1944. Plate glass production in 1944, although considerably below prewar levels, increased 36 per cent compared with 1943. Of particular interest is the demand created by the commissioning of many ships and the supplying and outfitting of the many new naval and military establishments, which caused a large gain in and, to a more limited extent, a continuing market for chinaware, semivitrified dinnerware and sanitary and electrical porcelain.

Following the usual practice in the industry, crude feldspar is reported in long tons of 2,240 pounds and ground feldspar in short (net) tons of 2,000 pounds.

Crude feldspar.—The active demands for crude feldspar in 1944 resulted in an increase of 6 per cent in quantity compared with 1943. The tonnage sold or used was only 3 per cent less than in the record year 1941. The value of the crude spar sold in 1944 reached a new high, and was 10 per cent above that reported in the highest previous year (1943).

Feldspar was mined in 13 States in 1944, the same States as in 1943 and 1942. In 1944, sales in North Carolina, the largest producing State, totaled 122,857

UNITED STATES PRODUCTION AND SALES OF SYNTHETIC RESINS, 1944

(Thousand pounds—net resin content)

Item	*Production*	*Sales*
Cyclic (coal-tar)	404,105	380,813
Condensation resins	334,330	311,280
Alkyd resins	132,397	118,344
Saturated polysters type	130,118	116,075
Unsaturated polyesters type	2,279	2,269
Coal-tar acid resins	197,312	188,361
Phenolic resins	158,944	153,365
Mixed phenolic (tar acid)	38,368	34,996
Other condensation resins	4,621	4,575
Polymerization resins	69,775	69,533
Polyaromatic resins	57,919	57,808
Other polymerization resins	11,856	11,725
Acyclic (non-coal-tar)	380,032	315,105
Condensation resins	178,655	165,972
Alkyd resins	112,685	105,091
Abietic acid and abietic acid-maleic acid	78,055	72,046
Fumaric acid	3,411	3,306
Maleic acid or anhydride and maleic anhydride-terpene	13,569	12,952
All other	17,650	16,787
Organic nitrogen resins	65,970	60,881
Urea-formaldehyde	47,972	43,016
Other organic nitrogen resins	17,998	17,865
Polymerization resins	201,377	149,133
Allyl and furfuryl alcohol polymerization resins	373	444
Polyvinyl alcohol, ester, and halide resins	111,900	91,369
Polyvinyl alcohol-aldehyde resins	14,992	11,611
Other polymerization resins	74,112	45,709
Total	784,137	695,918

1944 END-USE PATTERN FOR SYNTHETIC RESINS

(In thousands of pounds)

	Cyclic resins		*Acyclic resins*[1]	
Applications	*Quantity (net resin content)*	*Per cent of total*	*Quantity (net resin content)*	*Per cent of total*
Molding and casting	72,270	17.9	47,645	12.5
Protective coatings	188,678	46.7	103,888	27.3
Laminating	50,883	12.6	6,059	1.6
Adhesives	26,241	6.5	56,134	14.8
Textile, paper, and leather treatment	791	0.2	26,714	7.0
Miscellaneous uses	[2]65,242	16.1[3]	[3]139,592	36.8
Total	404,105	100.0	380,032	100.0

[1] Includes small amount of alicyclic and heterocyclic.
[2] Includes small amount of resins reported for ion exchange.
[3] Data of total quantity of acyclic resins produced and sold for glazing, sheeting, and films have been combined with resins for miscellaneous uses in order to prevent the disclosure of the operations of individual companies.
Source: United States Tariff Commission.

long tons valued at $778,007, a new record in both quantity and value, or 10 per cent and 19 per cent, respectively, larger in tonnage and value than in 1943. Production in Maine and Virginia increased 19 and 17 per cent, respectively. Tonnages mined in New Hampshire and Arizona also were substantially higher than in 1943, although actual data or approximate percentages of change may not be shown.

PLASTICS AND SYNTHETIC RESINS: SHIPMENTS AND CONSUMPTION IN THE UNITED STATES, JULY AND JUNE, 1945

(In pounds)

With the exception of the cellulose plastics products, molding materials, and vinyl resins, figures are shown on a dry basis. The cellulose plastics, molding materials and vinyl sheeting data represent total weight, including plasticizers, fillers and extenders. The other vinyl resins are shown on the basis of resin content. The data thus differ from the annual statistics compiled by the U. S. Tariff Commission, which are published on a resin content basis.

The figures shown represent the quantities shipped and the quantities consumed in producing plants. Consumption in this case refers to the quantities of plastics and resins which are manufactured and used by the reporting company or company division, and the shipments data represent the quantities which are shipped by the reporting companies to outside users or to non-producing company divisions or subsidiaries. While the shipments and consumption data are called for separately on the report form, they are combined for the purposes of this report, since in most cases separate statistics on shipments and consumption cannot be shown without disclosing the operations of individual companies.

Item	*Shipments and Consumption July 1945*	*June 1945*
Cellulose acetate and mixed ester plastics:[1]		
Sheets:		
Continuous (under .003 gauge)	645,665	659,548
Continuous (.003 gauge and upward)	303,528	372,583
All other sheets	345,301	354,302
Molding and extrusion materials[2]	5,017,512	*5,151,393
Nitrocellulose plastics:		
Sheets	632,756	*747,340
Rods and tubes	471,692	*520,123
Phenolic and other tar acid resins:		
Laminating (dry basis)	3,218,603	3,558,660
Adhesives (dry basis)	907,375	1,017,738
Molding materials[1]	9,742,920	11,387,736
All other (dry basis)[3]	3,632,194	4,548,307
Urea and melamine resins:		
Adhesives (dry basis)	2,531,138	2,970,291
Textile and paper treating (dry basis)	485,423	547,061
All other (dry basis)[3]	367,646	322,757
Polystyrene and coumarone-indene resins, all products[4]	4,816,761	5,898,006
Vinyl resins:		
Sheeting and film[1]	1,212,117	1,355,902
Textile and paper coating resins (resin content)	2,041,133	2,122,082
All other (resin content)[3]	1,669,263	2,170,949
Miscellaneous plastics and resins:		
Molding and extrusion materials[3 5]	9,032,707	10,569,934
All other (dry basis)[3 6]	3,388,285	3,553,389

* Revised.
[1] Includes fillers, plasticizers, and extenders.
[2] Includes data for one company not canvassed in previous months. This company accounted for 7 percent of total shipments and consumption in June and 4 percent in July.
[3] Excludes data for protective coating resins.
[4] Cannot be shown separately without disclosing the operations of individual companies.
[5] Includes data for ethyl cellulose, urea and melamine, vinyl, acrylic acid, and miscellaneous molding and extrusion materials.
[6] Includes petroleum resins, acrylic acid ester resins, mixtures, and miscellaneous synthetic resin materials.

PLASTIC-TEXTURE PAINTS, COLD WATER PAINTS, AND CALCIMINES: SALES BY QUANTITY AND BY VALUE, JANUARY-AUGUST, 1945

Product	1945 *August*	*July*	*June*	*May*	*April*	*March*	*February*	*January*
Plastic-Texture Water Paints, Total:*								
Pounds	748,480	784,331	710,881	777,980	667,017	909,502	584,329	505,973
Value	$49,980	$50,059	$49,656	$54,119	$46,170	$61,573	$39,652	$34,975
Cold Water Paints, Total Value	$512,186	$481,904	$627,449	$522,737	$466,256	$563,303	$409,568	$427,650
Interior, total value	$337,484	$306,484	$423,047	$359,079	$303,959	$432,583	$330,414	$357,075
Casein and other protein bound:								
Paste and semipaste form:								
Gallons	207,725	179,438	276,061	208,591	183,078	276,448	212,528	217,520
Value	$261,796	$235,606	$361,201	$297,715	$237,251	$364,388	$281,552	$299,482
Dry-powder form:								
Pounds	813,045	775,023	625,165	658,427	577,322	712,652	420,026	590,575
Value	$65,131	$61,553	$53,618	$53,985	$57,769	$59,640	$35,899	$48,031
Glue bound:								
Pounds	231,709	198,370	216,364	208,575	222,545	260,935	233,635	239,740
Value	$10,557	$9,325	$8,228	$7,379	$8,939	$8,555	$12,963	$9,562
Exterior, total value	$174,702	$175,420	$204,402	$163,658	$162,297	$130,720	$79,154	$70,575
Casein and other protein bound:								
Pounds	320,698	275,467	557,780	424,662	402,858	429,598	182,516	249,429
Value	$20,123	$16,839	$36,137	$27,017	$30,778	$25,861	$9,609	$15,170
Lime and/or cement bound:								
Pounds	2,000,200	2,029,289	2,246,486	1,773,259	1,731,598	1,369,216	868,342	715,155
Value	$154,579	$158,581	$168,265	$136,641	$131,519	$104,859	$69,545	$55,405
Calcimines, Total:								
Pounds	1,990,279	1,808,705	3,347,302	2,426,212	2,001,698	2,583,917	1,954,127	1,934,639
Value	$100,908	$87,066	$170,435	$114,833	$95,204	$122,363	$83,902	$95,616
Hot water:								
Pounds	629,532	691,837	1,278,687	1,242,665	993,657	1,423,248	999,201	922,178
Value	$27,792	$32,544	$55,900	$55,076	$44,884	$64,760	$40,454	$44,277
Cold water:								
Pounds	1,360,747	1,116,868	2,068,615	1,183,547	1,008,041	1,160,669	954,926	1,012,461
Value	$73,116	$54,522	$114,535	$59,757	$50,320	$57,603	$43,448	$51,339

* Includes Paste and Dry Powder Plastic-Texture Water Paints which cannot be shown separately without disclosing operations of individual companies.

Output in Wyoming was the largest ever produced in that State. On the other hand, California, Colorado, Connecticut, New York, and South Dakota reported small to sizable declines in output.

Ground feldspar.—Sales of ground feldspar by merchant mills in 1944 increased 2 per cent in quantity and 8 per cent in value compared with 1943, and were only 3 per cent less in quantity than in the record year 1941. Total value of sales in 1944 established a new high, $3,863,026 or 2 per cent greater than in 1941, the former peak year.

Disposition of NH_3 Plants Depends on Fertilizer Demand

Although the synthetic ammonia capacity of the United States, which was more than doubled during the war to provide new materials for explosives is far in excess of peacetime requirements, the ultimate disposal of the Government-owned plants is still uncertain. Eight government-owned plants have been offered for sale by the Reconstruction Finance Corp. Inasmuch as peacetime industrial requirements for nitrogen constitute only one-third of estimated normal consumption, it is believed that possible purchasers of surplus ammonia plants must of necessity consider the possibilities of the fertilizer market.

While synthetic ammonium nitrate as a fertilizer was little used in this country prior to 1936, its consumption increased during the war. Its ready acceptance by farmers in the past two or three years may indicate increased usage in the future.

Failing purchase or lease of some of the surplus Government ammonia plants for conversion to production of ammonium nitrate for fertilizers and other materials, these plants may be held in stand-by condition, they may be dismantled, or some may be operated by the Government. One or more of these plans may be followed depending to some extent on the possibilities of individual plants.

Synthetic Threat Will Control Natural Rubber Price

The policy of our Government will be to use our war-built synthetic rubber industry as a bargaining threat to ensure reasonable prices for natural rubber.

The immediate concern of the United States in British and Dutch rehabilitation stems from the belief here that if foreign producers rehabilitate their entire prewar facilities, the resultant supplies added to United States synthetic rubber production will result in a great excess of supply over demand.

Regardless of the policies of other countries a minimum synthetic rubber production will be maintained here. It will be up to the other powers whether natural rubber will have a large or small market in this country. The weapons which the Government has in hand to enforce its position are its ability to hold as stand-by plants many of the rubber producing facilities; its ability to compete in the world market with natural rubber at prices which, if they cannot be maintained competitively, may be supported by subsidy programs.

Implicit in the United States approach to the world rubber problem is a willingness to drop the more uneconomic synthetic rubber production here, provided British and Dutch rehabilitation programs abroad do not involve restoration of uneconomic or high-cost natural rubber facilities.

Lead Output Rises In September

Lead production (in terms of recoverable metal) from domestic mines was 30,546 short tons in September 1945, an increase of 173 tons over the August output, according to preliminary estimates of the Bureau of Mines, United States Department of the Interior. The average daily production in September was 1,018 tons, compared with 980 tons in August, a gain of 4 percent.

BYPRODUCTS OBTAINED FROM COKE-OVEN OPERATIONS IN THE UNITED STATES IN 1944[1]
(Exclusive of screenings or breeze)

Product		Production	Sales			On hand December 31
			Quantity	Value		
				Total	Average	
Tar	gallons	767,807,171	407,189,447	$21,897,933	$0.054	35,043,093
Tar derivatives:						
Creosote oil, distillate as such	do	31,849,034	31,931,611	3,855,798	.121	359,235
Creosote oil in coal-tar solution	do	11,930,287	10,493,286	1,237,190	.118	400,884
Tar acid oil	do	13,432,236	13,405,255	1,582,551	.118	534,383
Pitch of tar:						
Soft[2]	net tons	379,671	52,641	571,631	10.859	9,011
Hard[3]	do	289,553	23	506	22.000	600
Other tar derivatives				1,998,544		
Ammonia:						
Sulfate	pounds	1,636,487,509	1,553,923,139	19,828,483	.013	138,061,389
Liquor (NH_3 content)	do	63,329,672	60,008,642	1,914,785	.032	1,697,337
				21,743,268		
Sulfate equivalent of all forms	do	1,889,806,197	1,793,957,707			144,850,737
NH_3 equivalent of all forms	do	472,451,556	448,489,426			36,212,684
Gas:						
Used under boilers, etc.	M cubic feet	1,008,799,926	40,665,072	3,511,320	.086	
Used in steel or affiliated plants	do		374,379,422	41,080,953	.110	
Distributed through city mains	do		170,313,905	44,694,854	.262	
Sold for industrial use	do		35,803,212	4,835,273	.135	
		[4]1,008,799,926	621,161,611	94,122,400	.152	
Light oil and derivatives:						
Crude light oil	gallons	[5]267,861,984	21,872,366	1,817,804	.083	3,483,337
Benzol:						
All grades except motor	do	146,909,883	145,106,318	19,021,111	.131	4,190,144
Motor	do	18,556,555	17,289,409	1,547,410	.089	966,586
Xylol, crude and refined	do	8,668,740	8,903,131	2,283,754	.257	388,348
Solvent naphtha	do	5,564,012	5,348,188	787,481	.147	413,754
Other light oil products	do	42,737,493	38,962,220	9,460,465	.243	1,424,149
		[6]222,436,683	237,481,632	34,918,025	.147	
Naphthalene, crude	pounds	103,041,023	103,839,789	2,094,596	.020	2,066,214
Carbolic oil, light and heavy	gallons	1,476,828	1,479,604	155,492	.105	50,918
Pyridine:						
Crude	do	485,261	434,442	304,530	.701	77,110
Refined	do	135,091	135,180	471,814	3.490	4,257
Picoline	do	104,852	103,714	131,366	1.267	23,518
Sodium phenolate	do	3,317,770	3,212,981	186,965	.058	107,987
Other byproducts[7]				722,633		
Value of all byproducts sold				[8]185,995,242		

[1] Includes products of tar distillation conducted by coke-oven operators under some corporate name. [2] Softening point less than 110° F. [3] Softening point over 160° F. Includes some medium pitch of tar reported by one producer. [4] Includes gas used for heating ovens and gas wasted. [5] Refined on premises to make derived products shown: 259,544,535 gallons. [6] Total gallons of derived products. [7] Ammonium thiocyanate, cyanogen sludge, dicyclopentadiene, hexane, phenol from sources other than tar distillation, residuals, sodium prussiate,, sulfur, and vented vapors. [8] Exclusive of value of breeze production which was $13,281,342 in 1944.

Source: Bureau of Mines.

Have you any processes where

Enzymes

might be employed to advantage in your research or manufacturing operations? Write or telephone us regarding any enzymes you may now need or any enzyme applications which you may be considering, and our Sales and Engineering Departments will place their entire facilities at your disposal without obligation.

TAKAMINE LABORATORY, Inc.

Clifton, New Jersey

Telephone Passaic 2-4776

DRUMS

● **Full removable head containers.**
Where added strength and security are needed use our "Bolted Ring Seal" drum supplied in sizes from 10 to 70 gallons. Suitable for solids and semi-liquids. Consult us freely on your packaging problems. ●

a complete line of light gauge containers

EASTERN STEEL BARREL CORPORATION

BOUND BROOK — NEW JERSEY

STEARATES

ZINC STEARATE
CALCIUM STEARATE
ALUMINUM STEARATE
MAGNESIUM STEARATE

Stocks at

NEW YORK	ST. LOUIS	DALLAS	SAN FRANCISCO
CHICAGO	KANSAS CITY	LOS ANGELES	SEATTLE

FRANKS CHEMICAL PRODUCTS CO.
BLDG. 9, BUSH TERMINAL — BROOKLYN, N.Y.

ORGANIC PEROXIDES

CATALYSTS FOR POLYMERIZATIONS
DRYING ACCELERATORS · OXIDATION AGENTS · BLEACHING AGENTS

LUCIDOL®
(BENZOYL PEROXIDE)

LUPERCO®
(PEROXIDE COMPOUNDS)

ALPEROX® C
(TECHNICAL LAUROYL PEROXIDE)

LUPEROX®
(PEROXIDE PASTES)

Special Organic Peroxides



® REGISTERED TRADEMARK

LUCIDOL CORPORATION
BUFFALO (5) N. Y.

MARKET OUTLOOK

Procurement Time Tabulated by WPB

Great Expansion of Rayon Industry Foreseen

Shortage of Chilean Nitrate Expected

Huge Chlorine Output Will Use DPC Plants

Department of Commerce Surveys Chemical Stocks

Market Review

WPB Predicts Procurement Lag

Before its dissolution, the War Production Board assembled data on the time lag in procurement of various commodities. The lead time in this report is considered to be the time between receipt of order and the shipping date. The figures are an average, not taking into account conditions in specific localities, special quantities, or particular specifications. Furthermore, the lead time varies from week to week.

Purchasers seeking materials which have a long lead time may find these data helpful in substituting more available materials.

Item	*Prewar lead time (in weeks)*	*Present lead time (in weeks)*	*Lead time will be normal (est.) 1946*
Acids (heavy)	Stock	Stock	....
Charcoal	4	8	Jan.
Chrome chemicals	Stock	4	Jan.
Coated fabrics	3	8-13	July
Fertilizer material	Stock	Stock	....
Glue (animal)	Stock	8-13	May
Lead Chemicals	Stock	Stock	....
Molasses	Stock	8-13	?
Nicotine	Stock	4	Mar.
Peroxide	Stock	2	Jan.
Phthalic anhydide ..	Stock	Stock	....
Quinidine ...	Stock	4	?
Resins, natural	4	8-13	?
Rosin	Stock	13-17	July
Rotenone	Stock	4	Mar.
Sodium phosphate	Stock	8-12	July
Tapioca	Stock	13-17	?
Tar acids (cresyls and cresylic) ..	4	4	....
Waxes	4	8-13	?

Rayon Industry Expects to Double Volume by 1955

A spokesman for one of the large rayon companies has predicted that the industry will expand rapidly in the postwar years, probably reaching an annual output of 1½ billion pounds by 1955. Present production is at the rate of 750,000,000 pounds per year.

In keeping with this prediction, several large producers have announced expansion plans. Among these are American Viscose Corporation, Inc., Industrial Rayon Corporation, and Skenandoa Rayon Corporation. The increase in annual capacity contemplated by these three approximates 132,000,000 pounds.

Shortage Seen in Fertilizer Essentials

Distributors of nitrate of soda have been urged by the Civilian Production Administration to place orders immediately in order to forestall a possible cutback of production which may result from insufficient storage space at the point of manufacture and in warehouses.

Total foreign and domestic supplies of nitrate are expected to be 25 per cent short, during the current season, of the tonnage delivered to agriculture east of the Rockies during the 1944-45 season.

Contrary to popular belief, Chilean exports of nitrate of soda to this country will be considerably less this year than last. In the period July-June 1944-45, 950,000 short tons of nitrate were imported by this country from Chile. In 1945-46, however, Chilean imports are expected to amount to only about 650,000 tons since a greater volume is now moving from Chile to Europe and Egypt.

Ammonium sulfate, used in certain mixed fertilizers, is also in short supply. The national production in 1944-45 was about 900,000 short tons, but the forecast output in 1945-46 is only about 750,000 tons.

In view of the anticipated shortages, distributors have been strongly urged to place their orders early.

Chlorine Demand Seen Double That of Prewar

New uses for chlorine and its compounds and the expansion of others may bring annual requirements for the chemical to more than 1,000,000 tons. Before the war 65 per cent of the chlorine produced went into pulp and paper operations, 20 per cent to textiles, and 10 per cent into sanitation. Miscellaneous uses absorbed the remaining 5 per cent. Increased consumption is expected in the three main fields of use and a score or more new uses are expected to sharply increase the total consumption.

Current chlorine capacity of the coun-

Market Review

Heavy Chemicals.—The coal strike last fall had a far-reaching effect on ammonium sulfate deliveries. Shipments are running 30 to 60 days behind schedule, and will, perhaps, for several months. Shortages also exist in sodium phosphates, nickel salts, and the major alkalies. The market for calcium chloride, too, is expected to remain firm until next spring. There is a large export inquiry for sulfur; Italian and Sicilian mines are still lagging in production needed to meet European needs.

Permanganates and bichromates are still in short supply. A shortage of solid caustic soda is explicable on the grounds that the cost of production from liquid caustic is discouraging many producers from carrying out the drying step. The liquid material, consequently, will be more available throughout 1946, at least according to present indications.

Fine Chemicals.—In spite of the lessening demand for glycerin in the manufacture of explosives, demand remains heavy for civilian goods, particularly coatings. Stocks have declined considerably and the market remains firm. Saccharin, vanillin, and coumarin remain scarce. The price trend of mercury over the past year has definitely been reversed. Although the price is rising, the price of mercurials is disproportionately high and a further reduction is expected.

Both natural and synthetic camphor are scarce. The output of several other chemicals, penicillin, butyl alcohol, butyl acetate, and acetone, has been affected by labor difficulties in producing plants. The demand for quinine salts is greater than the supply, and the price of Brazilian menthol is again on an upward trend. A shortage of pharmaceutical grade alcohol appears to be developing. Thymol and oxalic acid are also scarce.

On the other side of the ledger, chloroform has gone down in price, and the demand for acetic acid is sluggish. Inventory restrictions have been removed from furfural, allowing users to rebuild their stocks to desired levels. It is now in ample supply.

Agricultural Chemicals.—More Chilean nitrate is available for immediate delivery than at any time within the past three years. Imports were higher last season than expected, but this will not be true of the coming season. Agricultural insecticides are also in good supply, with the exception of nicotine sulfate and rotenone.

Specialty Chemicals.—Suspension of ceiling prices on Carnauba and other vegetable waxes has relieved the situation in regard to imports. Prices, however, are quoted at 15c to 20c a pound over former ceilings.

try is estimated to be in excess of 1,500,000 tons a year. Production in 1939 was 485,554 tons indicating more than a threefold expansion during the war. While there was some expansion of privately owned facilities, the bulk of the increased capacity came through the plants built with Government funds.

While no specific plans have as yet been announced for the disposal of the eight surplus Government-owned chlorine plants, it seems clear that at least some portion of the Government-owned capacity will be required by the chemical industry.

With a foreseeable demand for more than 1,000,000 tons a year, it is believed that up to one-half of the Government-owned chlorine capacity could be utilized to supplement private production. Four of the eight government plants are Defense Plant Corp. projects. The others are linked with ordnance production.

Commerce Department Surveys Chemicals

The U. S. Department of Commerce published recently a survey of the present and potential situation in regard to chemicals and chemical products:

Civilian demands for sulfuric acid, the alkalies, and peroxygen chemicals will absorb the quantities which were released by the cancellation of military contracts. Peacetime uses are being sought for chemicals such as silica gel which have had large and important wartime uses but little prewar demand.

With the freeing of cyclic crudes and other raw materials for civilian purposes, the organic branch of the chemical industry is in a favorable position to go ahead with its manufacturing operations.

Supplies of insecticides have been adequate for agriculture during the 1945 season. New types of insecticides, and improved methods of production and application will undoubtedly tend to increase demand and every indication points to enlarged markets for insecticides both here and abroad. Present outlook for the industry is very bright.

With the removal of practically all controls over paint raw materials and the relaxing of those that continue in effect, the paint industry has been placed in a generally favorable position. Drying oils, rosin, and, for the time being, white lead remain the only outstanding problems in raw materials.

The paint industry undoubtedly has the capacity now and the requisite raw materials in sight to meet a demand somewhat greater than that visualized for the next few months.

The plastics materials outlook has changed suddenly from one of extreme stringency to one of surplus supplies. However, the changeover from military-material types to those generally used for civilian products will not be accomplished immediately.

DOW
chemicals in growing production

Four Vital Alkanolamines

Now in production at Dow, these four important amines . . . Monoethanolamine, Diethanolamine, Triethanolamine and Monoisopropanolamine . . . are daily proving their usefulness in many applications. During the coming months Dow plans a considerable expansion in its facilities for manufacturing them.

If you are one of the many users of these important chemicals . . . or studying their possibilities in your operations . . . we invite you to get in touch with your nearest Dow office.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

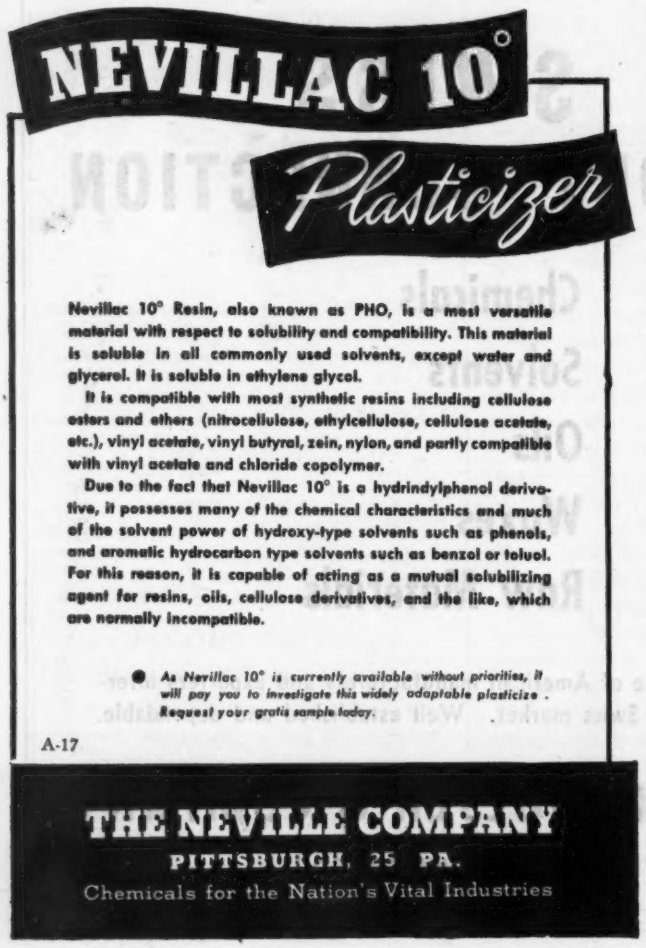
SWISS
EXPORT CONNECTION

Chemicals
Solvents
Oils
Waxes
Raw Materials

At the service of American manufacturers and exporters interested in the Swiss market. Well established and dependable.

WALTER MOESCH & COMPANY
Zurich, Switzerland





CURRENT PRICES

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f.o.b. works are specified as such. Import chemicals are so designated.

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both.

Purchasing Power of the Dollar: 1926 Average—$1.00
November, 1943, $0.900 November, 1944, $0.880
November, 1945, $0.858

		Current		1944		1943	
		Low	High	Low	High	Low	High
Acetaldehyde,99%,drs.wks.	lb.	.11	.14	.11	.14	.11	.14
Acetic Anhydride, drs,	lb.	.11½	.13	.11½	.13	.11½	.13
Acetone, tks, delv.	lb.	.06	.07	...	.07	...	.07
ACIDS							
Acetic, 28%, bbls	100 lbs.	3.38	3.63	3.38	3.63	3.38	3.63
glacial, bbls.	100 lbs.	9.15	9.40	9.15	9.40	9.15	9.40
tks, wks.	100 lbs.	6.93	7.25	6.93	7.25	...	6.93
Acetylsalicylic, Standard USP	lb.	.40	.54	.40	.54	.40	.54
Benzoic, tech. bbls.	lb.	.43	.47	.39	.47	.39	.47
USP, bbls, 4,000 lbs. up	lb.	...	.54	...	.54	...	.54
Boric tech, bbls, c-l	tons e	...	109.00	...	109.00	...	109.00
Chlorosulfonic, drs, wks.	lb.	.03	.04½	.03	.04½	.03	.04½
Citric, USP, crys, gran, bbls.	lb. *b*	.20	.21	.20	.21	.20	.24
Cresylic 50%, 210-215° HB, drs. wks. frt. equal	gal.	.81	.83	.81	.83	.81	.83
Formic, 85%-90% cbys.	lb.	.10	.11½	.10	.11½	.10½	.11½
Hydrofluoric, 30% rubber, dms.	lbs.	.08	.09	.08	.09	.08	.09
Lactic, 22%, lgt, bbls wks	lb.	.039	.0415	.039	.0415	.039	.0415
44%, light, bbls wks	lb.	.073	.0755	.073	.0755	.073	.0755
Maleic, Anhydride, drs	lb.	.25	.26	.25	.26	.25	.26
Muriatic, 18° cbys	100 lb.	1.50	2.45	1.50	2.45	1.50	2.45
20° cbys, c-l, wks.	100 lb.	...	1.75	...	1.75	...	1.75
22° cbys, c-l, wks	100 lb.	...	2.25	...	2.25	...	2.25
Nitric,36°,cbys, wks 100 lbs.	c	5.00	5.25	5.00	5.25	5.00	5.25
38°, c-l, cbys, wks 100 lbs.	c	...	5.50	...	5.50	...	5.50
40°, c-l, cbys, wks 100 lbs.	c	...	6.00	...	6.00	...	6.00
42°, c-l, cbys, wks 100 lbs.	c	...	6.50	...	6.50	...	6.50
Oxalic, bbls, wks	lb.	.11¼	.12½	.11¼	.12½	.11¼	.12½
Phosphoric, 100 lb. cbys, USP	lb.	.10½	.13	.10½	.13	.10½	.13
Salicylic, tech, bbls	lb.	.26	.42	.26	.42	.26	.44
Sulfuric, 60°, tks, wks	ton	...	13.00	...	13.00	...	13.00
66°, tks, wks	ton	...	16.50	...	16.50	...	16.50
Fuming 20% tks, wks.	ton	...	19.50	...	19.50	...	19.50
Tartaric, USP, bbls	lb.	.70½	.71	.70½	.71	...	.70½
Alcohol, Amyl (from Pentane) tks, delv	lb.	...	.131	...	.131	...	.141
Butyl, normal, syn, tks	lb.	...	.10¾	...	.10¾	.10¾	.14¼
Denatured, CD 14, c-l drs	gal. *d*	...	.59	...	.57	...	.54½
Denatured, SD, No. 1, tks.	*d*	...	.52	...	.50	...	.50
Ethyl, 190 proof tks.	gal.	...	17.60	...	17.60	...	11.90
Isobutyl, ref'd, drs	lb.	...	.086	...	.086	...	.086
Isopropyl ref'd, 91%, dms	gal.	.38	.41	.37½	.66½	.39	.66½
Alum, ammonia, lump, bbls, wks	100 lb.	...	4.25	...	4.25	...	4.25
Aluminum, 98-99%	100 lb.	15.00	16.00	15.00	16.00	15.00	16.00
Chloride anhyd l.c.l. wks	lb.	.09	.12	.08	.12	.08	.12
Hydrate, light, bgs.	lb.	...	.14½	...	.14½	.14½	.15
Sulfate, com'l. bgs, wks, c-l	100 lb.	1.15	1.25	1.15	1.25	1.15	1.25
Sulfate, iron-free, bgs, wks	100 lb.	1.75	2.00	1.85	2.50	1.75	2.50
Ammonia anhyd, cyl	lb.	...	.14½	...	.14½	...	.16
Ammonium Carbonate, USP, lumps, dms	lb.	.08¼	.09¼	.08½	.09¼	.08¼	.09¼
Chloride,wh,bbls,wks,100	lb.	4.45	5.15	4.45	5.15	4.45	5.15
Nitrate, tech. bags, wks.	lb.	.0435	.0450	.0435	.0850	.0435	.0850
Oxalate pure, grn. bbls.	lb.	...	.23	.27	.33	.27	.33
Perchlorate, kgs	lb.	No stocks		.55	.65	.55	.65
Phosphate, dibasic tech. bgs	lb.	.07	.07¾	.07	.07¾	.07¼	.08½
Stearate, anhyd. dms.	lb.	...	.34	...	.34	...	.34
Sulfate, dms, bulk	ton	28.20	29.20	28.20	29.20	28.20	30.00
Amyl Acetate (from pentane) tks., delv	lb.	...	.14½	...	.14½	...	.14½
Aniline Oil, drs	lb.	.11½	.12½	.11½	.12½	.11½	.12½
Anthraquinone, sub, bbls.	lb.	...	.70	...	.70	...	.70
Antimony Oxide, bgs	lb.	.15	.16	.15	.15½	.15	.15½
Arsenic, whi, kgs—powd.	lb.	.04	.04¾	.04	.04¾	.04	.04¾

USP $25 higher; Prices are f.o.b. N. Y., Chicago, St. Louis, deliveries ½c higher than NYC prices; *y* Price given is per gal; *c* Yellow grades 25c per 100 lbs less in each case; *d* Prices given are Eastern schedule, *e* Powdered boric acid $5 a ton higher; *b* Powdered citric acid is ½c higher.

		Current Low	Current High	1944 Low	1944 High	1943 Low	1943 High
Barium Carbonate precip, wks, bgs.	ton	60.00	75.00	55.00	75.00	55.00	65.00
Chloride, tech, cyst, bgs, zone 1	ton	73.00	78.00	73.00	90.00	77.00	90.00
Barytes, floated, bbls.	ton	...	36.00	...	36.00	...	36.00
Bauxite, bulk mines	ton	7.00	10.00	7.00	10.00	7.00	10.00
Benzaldehyde,tech,cbys,dms	lb.	.45	.55	.45	.55	.45	.55
Benzene (Benzol), 90%, tks, ft all'd	gal.	...	.15	...	.15	...	.15
Benzyl Chloride, cbys	lb.	.22	.24	.22	.28	.22	.25
Beta-Naphthol, tech, bbls, wks	ton	.23	.24	.23	.24	.23	.24
Bismuth metal, ton lots	lb.	...	1.25	...	1.25	...	1.25
Blanc Fixe, 66⅔% Pulp, bbls, wks	ton *h*	40.00	46.50	40.00	46.50	40.00	46.50
Bleaching Powder, wks,100 lb.		2.50	3.60	2.50	3.60	2.50	3.60
Borax, tech, c-l, bgs	ton *i*	...	45.00	...	45.00	...	45.00
Bordeaux Mixture, drs	lb.	.11	.11½	.11	.11½	.11	.11½
Bromine, cases	lb.	.21	.23	.21	.30	.25	.30
Butyl, acetate, norm. drs.	lb.	.1860	.1910	.1755	.1945	.1575	.1840
Cadmium Metal	lb.	.90	.95	.90	.95	.90	.95
Calcium, Acetate, bgs, 100 lb.		3.00	4.00	3.00	4.00	3.00	4.00
Carbide, drs	ton	50.00	90.00	50.00	95.00	50.00	95.00
Carbonate, c-l bgs	ton	18.00	22.00	18.00	22.00	18.00	22.00
Chloride, flake, bgs c-l	ton	18.50	35.00	18.50	35.00	18.50	35.00
Solid, 73-75% drs, c-l,	ton	18.00	34.50	18.00	34.50	18.00	31.50
Gluconate, U.S.P., drs.	lb.	.57	.59	.57	.59	.57	.58
Phosphate, tri, bbls, cl.	lb.	...	.0635	.0635	.0785	.0635	.0785
Camphor, U.S.P., gran, powd, bbls	lb.	.69	.71	.68½	.71	.68½	.70½
Carbon Bisulfide, 55-gal drs	lb.	.05	.05¼	.05	.05¼	.05	.05¼
Dioxide, cyl	lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, Zone 1, 52½ gal. drms	lb.	.73	.80	.73	.80	.73	.80
Casein, Acid Precip, bgs, 100 or more	lb.	.24	.24¼	...	.24	...	.24
Chlorine, cyls, lcl, wks, contract	lb.	...	.07¼	...	.07¼	...	.07¼
cyls, c-l, contract	lb. *j*	...	.05¼	...	.05¼	...	.05¼
Liq, tk, wks, contract 100 lb.		...	1.75	...	1.75	...	1.75
Chloroform, tech, drs	lb.	.20	.23	.20	.23	.20	.23
Coal tar, bbls, crude	bbl.	8.25	8.75	8.25	8.75	8.25	8.75
Cobalt, Acetate, bbl	lb.	...	.83¾	...	.83¾	...	.83¾
Oxide, black kgs	lb.	...	1.84	...	1.84	...	1.84
Copper, metal	100 lb.	12.00	12.50	12.00	12.50	12.00	12.50
Carbonate, 52-54%, bbls.	lb.	.19½	.20½	.19½	.20½	.19½	.20½
Sulfate, bgs, wks cryst.	100 lb.	5.00	5.50	5.00	5.50	5.00	5.50
Copperas, bulk, c-l, wks	ton	...	14.00	...	14.00	...	14.00
Cresol, USP, drs	lb.	.10¾	.11¾	.10¾	.11¾	.10¾	.11¾
Cyanamid, bgs	ton	1.52½	1.62½	1.52½	1.62½	1.52½	1.62½
Dibutylamine, c-l, drs, wks,		...	.66	...	.66	...	.66
Dibutylphthalate, drs	lb.	.1770	.2359	.1780	.2659	.2060	.2300
Diethylaniline, lb drs	lb.	...	.40	...	.40	...	.40
Diethyleneglycol, drs, wks	lb.	.14	.15	.14	.15½	.14	.15½
Dimethylaniline, dms,cl.,lcl	lb.	.21	.22	.21	.24	.23	.24
Dimethyl phthalate, drs	lb.	.1875	.1925	.1875	.1925	.1875	.2050
Dinitrobenzene, bbls	lb.	...	.18	...	.18	...	.18
Dinitrochlorobenzene, dms	lb.	...	.14	...	.14	...	.14
Dinitrophenol, bbls	lb.	...	.22	...	.22	...	.22
Dinitrotoluene, dms	lb.	...	.18	...	.18	...	.18
Diphenyl, bbls lcl. wks	lb.	.16	.20	.16	.20	.15	.20
Diphenylamine bbls	lb.	...	.25	...	.25	...	.25
Diphenylguanidine, drs	lb.	.35	.37	...	.35	.35	.37
Ethyl Acetate, tks, frt all'd	lb.	.0975	.1175	.1070	.1175	.107	.110
Chloride, drs	lb.	.18	.20	.18	.20	.18	.20
Ethylene Dichloride, lcl. wks, E. Rockies, dms	lb.	.0842	.0941	.0842	.0941	...	.0842
Glycol, dms, cl.	lb.	...	.10	...	.10	...	.10
Fluorspar, No. 1, grd.95-98% bulk, cl-mines	ton	...	37.00	...	37.00	...	37.00
Formaldehyde, bbls, cl & lcl	lb.	.0520	.0570	.0520	.0570	.0550	.0575
Furfural tech, dms, c-l,wks	lb.	...	.13	...	.13	...	.12½
Fusel Oil, ref'd, dms, dlvd	lb.	.18½	.19½	.18½	.19½	.18½	.19½
Glauber's Salt, Cryst, c-l, bgs, bbls, wks	100 lb.	1.05	1.45	1.05	1.25	1.05	1.25
Glycerin dynamite, dms, c-l,	lb.	...	16½	...	.14½	...	.18¾
Crude Saponification, 80% to refiners tks	lbs.	...	.11½	.09½	.10	...	.12¾

GUMS

Gum Arabic, amber sorts bgs	lb.	.11½	.12	.11¾	.14	.13½	.17½
Benzoin Sumatra, CS	lb.	.52	1.00	.52	1.00	.52	1.00
Copal, Congo	lb.	...	.55¾	...	.55¾	...	.55¾
Copal, East India, chips	lb.	...	.5¾	...	...	...	...
Macassar dust	lb.	...	.07¾	...	.07¾	.07¾	.11¾
Copal Manila,		.13½	.15½	.13½	.15½	.13½	.15½
Copal Pontianak, bold c-l	lb.	...	.23⅜	...	.23⅜	...	.23⅜
Karaya, bbls, bxs, dms	lb.	.18	.46	.15	.46	.14	.40

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; rened, ref'd; tanks, tks; works, f.o.b., wks.
y Price given is per gal.

YOUR EXPORT FUTURE

You are making plans — but are you adequately represented in those countries where you expect to sell?

Even the most carefully planned export sales campaign is likely to bog down unless you have competent, energetic and enthusiastic sales representatives to execute your instructions.

Our complete organization, backed by more than half a century of experience, is at your service. Our sales staffs cover *chemicals, foodstuffs, hardware, steel. Your inquiries are invited.*

OTIS, McALLISTER & CO.

World Traders Since 1892

310 SANSOME STREET, SAN FRANCISCO 4
CANAL BUILDING, NEW ORLEANS 12

LOS ANGELES CHICAGO NEW YORK

BLL

BARBITURATES

•

ACID DIALLYL BARBITURIC
Medicinal

BARBITAL U.S.P.

BARBITAL SODIUM U.S.P.

PENTOBARBITAL SODIUM U.S.P.

PHENOBARBITAL U.S.P.

PHENOBARBITAL SODIUM U.S.P.

•

Prices and other details on request

LEMKE for fine chemicals

B. L. LEMKE & COMPANY
Fine and Rare Chemicals • Pharmaceuticals • Organic Specialties
248-250 WEST BROADWAY, NEW YORK 13, N. Y.
Telephone: WAlker 5-9870 Cable Address: LEMCHTEX, All Codes.
Warehouse: 2-6-8 BEACH STREET, N. Y. C.

HYDROGENATION

facilities

Available for research pilot plant or production quantities.

Experienced with oils, fatty acids, aldehydes, oximes, esters, unsaturated aliphatic and unsaturated aromatic compounds.

****

Write or call

VITAMOIL LABORATORY, INC.

specialists in customer hydrogenation

Foot of Henderson St.
Jersey City New Jersey
Bergen 3-5304

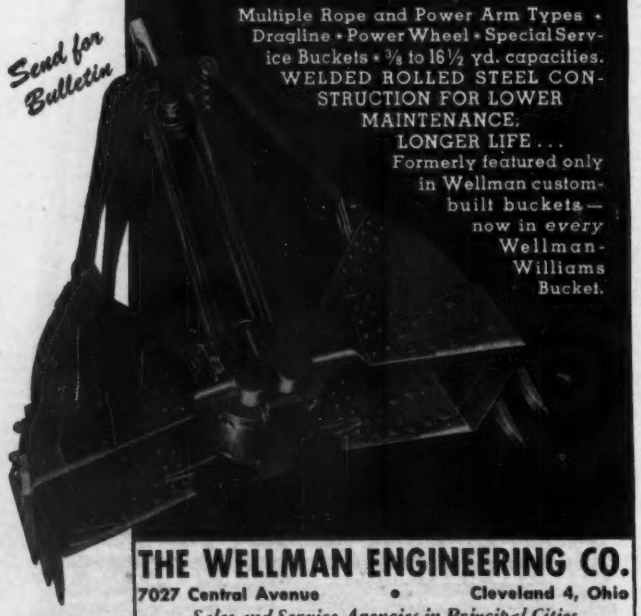
WELLMAN

Williams **BUCKETS**

PERFORM BETTER *Longer*

Multiple Rope and Power Arm Types • Dragline • Power Wheel • Special Service Buckets • ⅜ to 16½ yd. capacities. WELDED ROLLED STEEL CONSTRUCTION FOR LOWER MAINTENANCE, LONGER LIFE . . . Formerly featured only in Wellman custom-built buckets—now in *every* Wellman-Williams Bucket.

Send for Bulletin



THE WELLMAN ENGINEERING CO.
7027 Central Avenue • Cleveland 4, Ohio
Sales and Service Agencies in Principal Cities

Current Prices

Gums
Salt Cake

		Current		1944		1943	
		Low	High	Low	High	Low	High
Kauri, N. Y.							
Superior Pale XXX	lb.	...	.65¾	...	.65¾	...	.65¾
No. 3	lb.	...	.22	...	.23	...	.22
Sandarac, cs	lb.	...	.99½	...	.99½	1.40	nom.
Tragacanth, No. 1, cases	lb.	3.80	3.90	4.00	5.25	4.00	5.25
No. 3	lb.	2.15	2.60	1.10	3.50	1.10	1.20
Yacca, bgs	lb.	.06	.07¼	.06	.07¼	.06	.07¼
Hydrogen Peroxide, cbys	lb.	.15½	.18½	.15½	.18½	.15½	.18½
Iodine, Resublimed, jars	lb.	1.75	1.85	2.00	2.10	2.00	2.10
Lead Acetate, cryst, bbls	lb.	...	.12½	...	.12½	...	.12½
Arsenate basic, bg, lcl	lb.	.11½	.12	.11½	.12	.11½	.12
Nitrate, bbls.	lb.	...	.12½	...	.12½	...	.12
Red, dry, 95% Pb_3O_4 bbls.	lb.	.09	.10¾	.09	.11	.09	.11
97% Pb_3O_4, bbls delv	lb.	.09½	.11	.09¼	.11	.09¼	.11
98% Pb_3O_4, bbls delv	lb	.09½	.11¼	.09½	.11¼	.09½	.11¼
White, bbls	lb.	.08¼	.08¾	.08¼	.08¾	.08¼	.08¾
Basic sulfate, bbls, lcl	lb.	.07¼	.08	.07¼	.08	.07¼	.08
Lime, Chem., wks, bulk	ton	6.50	9.25	6.25	13.00	6.25	13.00
Hydrated, f.o.b. wks	ton	8.50	.12	8.50	16.00	8.50	16.00
Litharge, coml, delv. bbls	lb.	.08	.09¾	.08	.09¾	.08	.09¾
Lithopone, ordi., bgs	lb.	.04¼	.04½	.04¼	.04¾	.04¼	.04¾
Magnesium Carb, tech, wks	lb.	.07¼	.10¾	.06¼	.09¾	.06¼	.09¼
Chloride flake, bbls, wks c-l	ton	...	32.00	...	32.00	...	32.00
Manganese, Chloride, Anhyd. bbls	lb.	.15	.18	.15	.18	.14	nom.
Dioxide, Caucasian bgs, lcl	ton	74.75	79.75	...	74.75	...	74.75
Methanol, pure, nat, drs gal	*l*	.63	.73	.63	.76	.63	.76
Synth, drs cl	gal. *m*	.31	.38	.31	.40½	.34½	.40½
Methyl Acetate, tech tks	lb.	.06	.07	.06	.07	.06	.07
C.P. 97-99%, tks, delv	lb.	.09½	.10½	.09½	.10½	.09½	.10½
Chloride, cyl	lb.	.32	.40	.32	.40	.31	.40
Ethyl Ketone, tks, frt all'd	lb.	...	.08	...	.08	...	.08
Naphtha, Solvent, tks	gal.	...	.27	...	.27	...	.27
Naphthalene, crude, 74°, wks tks	lb.	...	.0275	...	.0275	...	.0275
Nickel Salt, bbls, NY	lb.	.13	.13½	.13	.13½	.13	.13½
Nitre Cake, blk	ton	...	16.00	...	16.00	...	16.00
Nitrobenzene, drs, wks	lb.	.08	.09	.08	.09	.08	.09
Orthoanisidine, bbls	lb.	...	.70	...	.70	...	.70
Orthochlorophenol, drs	lb.	.25	.27	.25	.32	...	.32
Orthodichlorobenzene, drms	lb.	.07	.08	.07	.08	.07	.08
Orthonitrochlorobenzene, wks	lb.	.15	.18	.15	.18	.15	.18
Orthonitrotoluene, wks, dms	lb.	...	.09	...	.09	...	.09
Paraldehyde, 98%, wks lcl.	lb.	...	.12	...	.12	..	.12
Chlorophenol, drs.	lb.	.26½	.28	.25	.32	...	.32
Dichlorobenzene, wks	lb.	.11	.15	.11	.15	.11	.15
Formaldehyde, drs, wks	lb.	.21	.22	.23	.24	.23	.24
Nitroaniline, wks, kgs	lb.	.43	.45	.43	.45	.43	.45
Nitrochlorobenzene, wks	lb.	...	.15	...	.15	...	.15
Toluenesulfonamide, bbls	lb.	...	.70	...	.70	...	.70
Toluidine, bls, wks	lb.	...	.48	...	.48	...	.48
Penicillin, ampules per 100,000 units		.55	.95	.95	4.50	...	...
Pentaerythritol, tech	lb.	.27	.31	.29	.33	.29	.35½

PETROLEUM SOLVENTS AND DILUENTS

Lacquer diluents, tks, East Coast	gal.	...	.11½	...	.11½	...	.11
Naphtha, V.M.P., East tks, wks	gal.	...	.11	...	.11	...	.11
Rubber solvents, East, tks, wks	gal.	...	.11	...	.11	...	.11
Stoddard Solvents, East, tks, wks	gal.	...	.10	...	.10	...	.09½
Phenol, U.S.P., drs	lb.	.10½	.11¼	.10½	.11¼	.10½	.13¼
Phthalic Anhydride, cl and lcl, wks	lb.	.13	.14	.13	.14	.13	.15½
Potash, Caustics, 88-92%, wks, sol.	lb.	.06¼	.06¾	.06¼	.06¾	.06¼	.06¼
flake, 88-92%	lb.	.07	.07½	.07	.07½	.07	.07½
liquid, 45% basis, tks	lb.	...	.02⅞	...	.02¾	...	.0275
dms, wks	lb.	.03⅛	.03½	.03	.03½	.03	.03½
Carbonate, hydrated 83-85%	lb.	...	.05½	.05½	.05¾	.05¾	.05¾
Chlorate crys, bgs, wks	lb.	.11	.13	.11	.13	.11	.13
Chloride, crys, tech, bgs, kgs	lb.	.08	nom.	.08	nom.	.08	nom.
Cyanide, drs, wks	lb.	...	.55	...	.55	...	.55
Iodide, bots., or cans	lb.	1.44	1.48	1.44	1.48	1.44	1.48
Muriate, dom, 60-62-63% K_2O bulk unit-ton	ton	...	.53½	...	.53½	.53½	.56
Permanganate, USP, wks dms	lb.	.20½	.21	.20½	.21	.20½	.21
Sulfate, 90%, basis, bgs	ton	...	36.25	...	36.25	...	36.25
Propane, group 3, tks	gal.	...	.03¾	...	.03¾	...	.03¾
Pyridine, ref., drms	lb.	.45	.45½	.45	.46	.45½	.46
R Salt, 250 lb bbls, wks	lb.	...	.65	...	.65	...	.65
Resorcinol, tech, drms, wks	lb.	.64	.74	.68	.75	.68	.75
Rochelle Salt, cryst	lb.	.43½	.47	.43½	.47	.43½	.47
Salt Cake, dom, blk wks	ton	...	15.00	...	15.00	...	15.00

l Producers of natural methanol divided into two groups and prices vary for these two divisions; *m* Country is divided in 4 zones, prices varying by zone.
* Spot price is ½c higher.

		Current Low	Current High	1944 Low	1944 High	1943 Low	1943 High
Saltpetre, grn, bbls	100 lb.	8.20	8.60	8.20	8.60	8.20	8.60
Shellac, Bone dry, bbls	lb. r	.42½	.46	.42½	.46	.42½	.46
Silver Nitrate, 100 oz, bots							
2,500-oz. lots	oz.	.47	.47¾	...	.32⅜	...	.32⅜
Soda Ash, 58% dense, bgs, c-l, wks	100 lb.	...	1.15	...	1.15	...	1.15
58% light, bgs cl	100 lb.	1.05	1.13	1.05	1.13	...	1.13
Caustic, 76% flake drms, cl	100 lb.	...	2.70	...	2.70	...	2.70
76% solid, drms,cl	100 lb.	...	2.30	...	2.30	...	2.30
Liquid, 47-49%, sellers, tks	100 lb.	...	1.95	...	1.95	...	1.95
Sodium Acetate, anhyd. dms	lb.	.08½	.10	.05	.10	.05	.06
Benzoate, USP dms	lb.	.46	.52	.46	.52	.46	.52
Bicarb, tech., bgs., cl., works	100 lb.	1.55	1.90	1.55	2.05	....	....
Bichromate, bgs,wks l.c.l.	lb.	.07⅛	.08⅛	.07⅞	.08⅛	...	.07¾
Bisulfite powd, bbls, wks	100 lb.	3.00	3.60	3.00	3.60	3.00	3.60
35° bbls., wks	100 lb.	1.40	1.65	1.40	1.65	1.40	1.65
Chlorate, kgs, wks c.l.	lb.	...	.06¼	...	.06¼	...	.06¼
Cyanide, 96-98%, wks	lb.	.14½	.15	.14½	.15	.14½	.15
Fluoride, 95%, bbls, wks	lb.	.07¼	.08¼	.07¼	.08¼	.07¼	.08¼
Hyposulfite, cryst, bgs, cl, wks	100 lb.	...	2.25	...	2.25	...	2.25
Metasilicate, gran, bbl, wks c-l	lb.	...	2.50	...	2.50	...	2.50
Nitrate, imp, bgs	ton	...	33.00	...	33.00	...	33.00
Nitrite, 96-98% bbl. cl.	lb.	...	.06¾	...	.06¾	...	.06¾
Phosphate, di anhyd. bgs. wks.	100 lb.	6.00	6.75	6.00	7.25	6.00	7.25
Tri-bgs, cryst, wks	100 lb.	2.70	3.10	2.70	3.40	2.70	3.45
Prussiate, yel, bbls. wks	lb.	...	.11	.10	.11	.10	.11
Silicate, 52°,drs,wks	100 lb.	1.40	1.80	1.40	1.80	1.40	1.80
40°, drs,.wks, c-l	100 lb.	...	.80	...	.80	...	.80
Silicofluoride, bbls NY	lb.	.06½	.10	.06½	.12	.05	.12
Sulfate tech. Anhyd. bgs	100 lb.	1.70	2.20	1.70	1.90	1.70	1.90
Sulfide, cryst c-l, bbls, wks	100 lb.	...	2.40	...	2.40	...	2.40
Solid, bbls, wks	lb.	3.15	3.90	3.15	3.90	3.15	3.90
Starch, Corn, Pearl, bgs	100 lb.	...	4.08	...	4.08	...	3.47
Potato, bgs, cl	lb.	...	.0637	...	.0637	...	.0637
Rice, bgs	lb.	no stocks		no stocks		.09½	.10¼
Sweet Potato, bgs	lb.	no stocks		.07½	.09¼	...	.07½
Sulfur, crude, mines	ton	...	16.00	...	16.00	...	16.00
Flour, USP, precp, bbls, kgs	lb.	.18	.30	.18	.30	.18	.30
Roll, bbls	100 lb.	2.40	2.90	2.40	2.90	2.40	2.90
Sulfur Dioxide, liquid, cyl	lb.	.07	.08	.07	.09	.07	.08
tks, wks	lb.	...	.04	.04	.06	.04	.06
Talc, crude, c-l, NY	ton	...	13.00	...	13.00	...	13.00
Ref'd, c-l, NY	ton	13.00	21.00	13.00	21.00	13.00	21.00
Tin, crystals, bbls, wks	lb.	no stocks		no stocks		no stocks	
Metal	lb.	...	.52	...	.52	...	.52
Toluol, drs, wks	gal.	...	.32	...	.34½	...	.33
tks, frt all'd	gal.	...	.27	...	.28	...	.28
Tributyl Phosphate, dms lcl, frt all'd	lb.	...	.49	...	.49	...	.47
Trichloroethylene, dms, wks	lb.	.08	.09	.08	.09	.08	.09
Tricresyl phosphate tks.	lb.	...	.24	...	.24	...	...
Triethylene glycol, dms	lb.	.18½	.19½	.18½	.26	...	.26
Triphenyl Phos, bbls	lb.	.26	.27½	.31	.32	.31	.32
Urea, pure, cases	lb.	...	.12	...	.12	...	.12
Wax, Bayberry, bgs	lb.	no stocks		.25	nom.	.25	.2[illegible]
Bees, bleached, cakes	lb.	no stocks		...	.60	...	.60
Candelilla, bgs crude	ton	no stocks		.34½	.48	.38	.48
Carnauba, No. 1, yellow, bgs, ton	lb.	no stocks		...	.83¼	...	.83¼
Xylol, Indus. frt all'd, tks, wks	gal.	...	.26	...	.27	...	.27
Zinc Chloride tech fused, wks	lb.	.05	.0535	.05	.0535	.05	.0535
Oxide, Amer, bgs, wks	lb.	.07¼	.07½	.07	.07½	.07	.07½
Sulfate, crys, bgs	100 lb.	3.40	4.15	3.40	4.35	3.60	4.35

OILS AND FATS

Babassu, tks, futures	lb.	...	.111	...	.111	...	.111
Castor, No. 3, bbls	lb.	.13¾	.14¼	.13¾	.14¼	.13¾	.14¼
China Wood, drs, spot NY	lb.	.39	.41	.39	.41	...	.39
Coconut, edible, drs NY	lb.	...	.0985	...	.0985	...	.0985
Cod Newfoundland, dms	gal.	.88	.90	.85	.90	...	.90
Corn, crude, tks, wks	lb.	...	.12¾	...	.12¾	...	.12¾
Linseed, Raw, dms, c-l	lb.	...	.1550	.1510	.1560	...	.1530
Menhaden, tks		...	.1225	...	.1225	...	.1225
Light, pressed, drs l.c.l.	lb.	...	.1300	...	.1200	.1305	.1307
Palm, Niger, dms	lb.	...	.0865	...	.0865	...	.0865
Peanut, crude, tks, f.o.b. wks	lb.	.12⅞	.13⅞	.12⅞	.13⅞	...	.18
Perilla, crude dms, NY	lb.	no stocks		...	.245	...	.245
Rapeseed, New Orleans, bulks	lb.	...	.1156½	...	.1156½	...	.1150
Red, dms	lb.	.13¼	.14½	.13¼	.14¼	...	...
Soy Bean, crude, tks, wks	lb.	...	.1175	...	.1175	...	.1175
Tallow, acidless, bbls	lb.	...	.14¼	...	.14¼	...	.14¼

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 2c; Philadelphia deliveries f.o.b N. Y., refined 6c higher in each case.

ACETATE SALTS

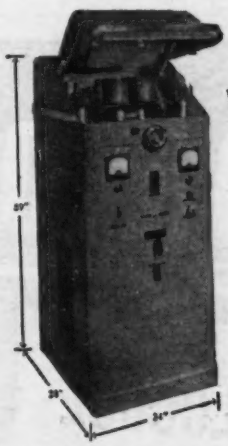
COPPER - ZINC

POTASSIUM - SODIUM

MAGNESIUM - MANGANESE

For further information write to





"Built-in Brains"

THE NEW

Thermatron

"HEATMASTER"

ELECTRONIC DIELECTRIC HEAT GENERATOR

5 KW — 17,000 B.T.U. Per Hour Output

The new "Heatmaster" has its "brains" built in — so that in production it may be operated safely by unskilled help. Operation is truly automatic — being limited to the insertion and removal of preforms on any designated time cycle.

For laboratory work, or manual operation, its advantages are equally outstanding. Owing to its one major control, the technician is enabled to concentrate his attention on the effect of high frequency rather than in the manipulation of electrical controls to produce a desired result.

The inclusion of fluorescent lighting in the electrode cage — while only a detail — illustrates the carefulness of design. The use of new long-life radial fin tubes cuts down operation expense. It has power to heat a 3.3 pound preform in one minute — 5 pounds in 90 seconds.

For plastics or for general purpose use, for research or production, the THERMATRON "Heatmaster" with its rugged construction, simplified controls, and generous power represents an outstanding development in electronic dielectric heaters.

All **Thermatron** *ratings based on output*

Send for new circular describing the 5 KW "Heatmaster" and other models in the THERMATRON LINE, ranging from 500 watts to 30 KW in output.

Address Desk CI-6

Thermatron Division

RADIO RECEPTOR COMPANY, Inc.

SINCE 1922 IN RADIO AND ELECTRONICS

Engineers and Manufacturers of Airway and Airport Radio Equipment



SHIP AND STORE
YOUR CHEMICALS, PIGMENTS *etc.*
IN Fulton
WATERPROOF BAGS

Sift-Proof, Moisture-Proof Containers Prevent Loss From Damage

Fulton Waterproof Bags are easy to handle and to store. They are tough and carry well. In many instances Fulton Waterproof Bags are replacing metal drums and other more expensive containers with entire satisfaction. Write our plant nearest you for full information.

FULTON BAG & COTTON MILLS
Manufacturers since 1870

Atlanta, St. Louis, New York, New Orleans
Minneapolis, Dallas, Kansas City, Kans., Denver

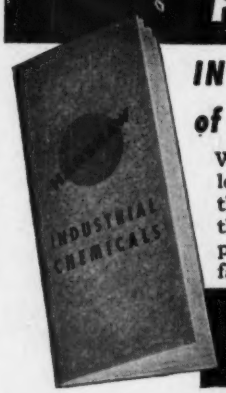
STANDARD
"THE ORIGINAL SYNTHETIC SOLVENT MANUFACTURERS"

ISOPROPYL ALCOHOL

Recommended for lacquers, resins, artificial leather, laminating varnishes, and many additional industrial solvent applications.

STANDARD ALCOHOL CO.
26 BROADWAY - - NEW YORK 4, N. Y.

HERE'S HELP
IN SOLVING YOUR PROBLEMS
of CHEMICAL SUPPLIES



Write for your copy of this 34 page booklet which contains a representative list of the chemicals supplied to industry by this company. It is proving to be an important time saver for chemical buyers faced with "Where-to-get-it" problems.

THE HARSHAW CHEMICAL CO.
1945 E. 97th Street, Cleveland, Ohio
BRANCHES IN PRINCIPAL CITIES

SULPHUR
CRUDE 99½% PURE
Free from arsenic, selenium and tellurium
MINES—Clemens, Brazoria County, Texas
JEFFERSON LAKE SULPHUR CO., INC.
SALES DIVISION
809 BANKERS MORTGAGE BLDG., HOUSTON 2, TEXAS

The Chemical MARKET PLACE

Classified Advertisements

Local Stocks
Chemicals • Equipment

Raw Materials
Specialties • Employment

CONNECTICUT

a-CHLOROMETHYL-NAPHTHALENE
a-NAPHTHALENEACETIC ACID
a-NAPHTHALENEACETAMIDE
METHYL-a-NAPHTHALENEACETATE
AVAILABLE IN QUANTITY
WESTVILLE LABORATORIES, INC.
13 Housatonic Ave.
DEPT. V DERBY, CONN.
PRODUCED BY
WESLAB

ILLINOIS

Now Available
CHEMICALLY PURE
METHYL METHACRYLATE
(Monomeric - Liquid)
$CH_2 = C(CH_3)—COOCH_3$

Boiling Point	100.5°C
Specific Gravity	0.950
Refractive Index	1.417
Viscosity at 25° C.	0.59
Color	Water-Clear

Samples Upon Request
PETERS CHEMICAL MFG. CO.
3623 Lake Street
MELROSE PARK, ILL.

BROMIDES
POTASSIUM SODIUM
AMMONIUM CALCIUM
Send for Our Catalog
ARTHUR S. LaPINE & COMPANY
LABORATORY SUPPLIES AND REAGENTS
INDUSTRIAL CHEMICALS
121 WEST HUBBARD STREET
• CHICAGO 10, ILLINOIS •

MASSACHUSETTS

ALAN A. CLAFLIN
Manufacturers' Agent
DYESTUFFS and CHEMICALS
Specializing in
BENTONITE
AND
TALC
88 Broad Street Boston 10, Mass.
TELEPHONE Liberty 5944 - 5945

DOE & INGALLS, INC.
Chemicals and Solvents
Full List of Our Products; see Chemical Guide-Book
Everett Station, Boston EVErett 4610

E. & F. KING & Co., Inc.
Est. 1834
52 Purchase Street Boston, Mass.
New England Sales Agent
HURON PORTLAND CEMENT CO.
Industrial Chemicals
(CO_2)
Solid Carbon Dioxide

INDUSTRIAL CHEMICALS
RAW MATERIALS
IRVING M. SOBIN CO., INC.
72-74 Granite Street
Boston, Mass.
Tel. South Boston 3973
IMPORTERS and EXPORTERS

RHODE ISLAND

J. U. STARKWEATHER CO.
INCORPORATED
241 Allens Ave.
Providence, R. I.
INDUSTRIAL CHEMICALS
TEXTILE SPECIALTIES

GEORGE MANN & CO., INC.
FOX POINT BLVD.
PROVIDENCE 3, R. I.
PHONE — GASPEE 3466
TELETYPE PROV. 75
Branch Office
250 STUART STREET, BOSTON, MASS.
PHONE — HUBBARD 0661
INDUSTRIAL CHEMICALS
RED OIL
STEARIC ACID

NEW JERSEY

FOR PROMPT SERVICE IN THE NEW YORK AREA
SOLVENTS—ALCOHOLS
EXTENDERS
CHEMICAL SOLVENTS
Incorporated
60 PARK PLACE NEWARK 2, N. J.

Semi-Carbazide Hydrochloride
•
Hydrazine Sulphate
Commercial and C. P.
•
Hydrazine Hydrate
85% and 100%
FAIRMOUNT CHEMICAL CO., INC.
Manufacturers of Fine Chemicals
600 Ferry St. Newark 5, N. J.

NEW YORK

IDEAL REPLACEMENT PRODUCTS
Ammonium Thioglycolate
Agar Agar U.S.P.
Delto Zinc Oxide
Delto Gum Benzoin Synthetics
Menthol U.S.P. & Synthetics
Delto Carbon Blacks
DELTON PRODUCTS CORP.
489 FIFTH AVENUE NEW YORK 17, N. Y.

HEMA HEMA HEMA HEMA HEMA HEMA
HEXYLRESORCINOL
U.S.P.XII

for
immediate delivery
Crystalline —
M.P. 66° — 67° C
Practically non-toxic—
high phenol coefficiency
Used in
Mouth wash (non-alcoholic)
Ointments, Toothpastes,
Lozenges, Cosmetic Creams,
Soaps, Hair preparations.
New Low Prices
HEMA DRUG CO., Inc.
Manufacturers of rare chemicals
56-38 CLINTON AVE. MASPETH, NEW YORK
Tel. NEWTOWN 9-2110

NEW

HIGH MELTING POINT
MICRO-CRYSTALLINE
PETROLEUM WAXES
in *POWDER FORM*

INDUSTRIAL
RAW MATERIALS CO.
70 Pine St. - New York 5, N. Y.
Whitehall 4-0710-1-2

PENNSYLVANIA

FOR ALL INDUSTRIAL USES

AFCO BRAND

CHEMICALS

SINCE 1855
Spot Stocks
Technical Service

ALEX C. FERGUSSON CO.
450 Chestnut St. PHILADELPHIA, PA.
and Allentown, Pa.
Lombard 2410-11-12

CALIFORNIA

2-4-D

2-4-dichlorophenoxyacetic
acid and its salts
Immediate and 1946 Delivery
Available in Quantity
VEITH CHEMICAL CO.
1261 Blackstone Avenue
FRESNO 4. CALIFORNIA

MACHINERY and EQUIPMENT FOR SALE

MACHINERY FOR SALE

4—Copper Stills from 24 gallons to 500 gallons
1—Jeffrey Swing Hammer Shredder
2—Jewell 250 GPH Water Stills
9—Glass lined tanks from 65 gals. to 3,100 gallons
6—Hance Bros. Tablet Presses ½" to 1" size
36—Bronze Pumps, All sizes and capacities
8—J. H. Day Heavy Duty Mixers 50 to 500 lbs.
2—Robinson Attrition Mills
1—Pfaudler glass lined jacketed, agitated reaction kettle, 25 gals.
2—New Oliver continuous filters
15—Condensers 25 sq. ft. to 440 sq. ft.
3—Sharpless #6 Clarifiers
1—A. O. Smith Stainless Steel Heat Exchanger, 175 sq. ft.
2—Ingersoll Rand 4,000 cu. ft. per minute Blowers
1—R. A. Jones Cincinnati Automatic Cartoner
1—Colton #2 Rotary Clipper and Closer

Also: New Stainless Steel Tanks and Kettles, Bronze and stainless steel Pumps, Cast Iron Filter Presses—Air and Ammonia Compressors

Write for Latest Stock List

PERRY EQUIPMENT & SUPPLY COMPANY
1515 W. Thompson St., Phila. 21, Penna.

LIQUIDATION
Large Chemical Plant
Natrona, Pa.

1—Scott Quadruple Effect Evaporator, 2500 sq. ft. per effect, vertical steel tubes
1—Allis Chalmers 20" x 10" Jaw Crusher
1—Raymond 5 Roll Low Side Mill
1—16" Troughing Belt Conveyor, 180'
1—6' x 60' Rotary Dryer or Kiln
5—Rotary Dryers, 6' x 40', 3½' x 16', 3' x 16', 4' x 20'
6—Horizontal Digesters, 6' dia. x 12' long, with agitators
2—Kelly #450 Filters
1—American 6' dia. 2 Disc Rotary Filters
1—FEINC 5' x 4' Rotary Continuous Filter with vacuum pump and motors
2—6' x 27'5" Rotary Steam Tube Dryers
6—Bucket Elevators, 25' to 40' centers
40—Agitator Headers, for 10' to 22' dia. Tanks
15—Centrifugal Pumps, from 2" to 8"
1000 HP Motors, 10 to 150 HP, all Westinghouse, 3/60/440 volt, from 490 to 860 RPM
MISCELLANEOUS: Structural Steel; Pipe 2" to 8"; Screw Conveyor; Shafting; etc.

Wire or write for complete bulletin

STOCK ITEMS!

2—Stainless Steel Tanks, 3000 gal.
2—Vacuum Shelf Dryers; Buffalo, with 12—60" x 80" shelves; Devine with 13—59" x 78" shelves.
1—Sperry 24" x 24" Rubber Filter Press.
3—Shriver 36" x 36" Rubber Filter Presses, 18 to 50 chambers
4—Stokes Rotary Vacuum Dryers, 1'6" x 3'6", 4' x 10', 3' x 12', 5' x 33'
5—Roller Mills; Kent 4 Roll High Speed, 13" x 32"; Ross 3 Roll, 12" x 30".
3—Abbe 175, 200, 325 gal. Pebble Mills
6—Oliver 8' x 6' Stainless Steel Rotary Continuous Filters. NEW.
1—Oliver Robison 6' x 4' Top Feed Ni-Resist Rotary Continuous Filter
2—Oliver Rotary Filters, 3' x 1', 5' x 8'
2—Rotex Sifters, 40" x 84", 20" x 48"
1—Buffalo 5' x 6' Atmospheric Drum Dryer
2—Sweetland No. 2 & 10 Filters
5—Copper Vacuum Pans, 30" to 6' dia.
6—Powder Mixers, 100 and 800 lb.
2—Premulsion Mills, stainless steel, 3 HP motors
1—Lancaster 30" Batch Mixer
1—125 gal. Aluminum Jktd. Kettle
1—Filler Machine Co. 6 spout Filler
1—Kiefer No. 3 Visco Filler
5—Double Arm Mixers, 10 to 100 gal.
12—Shriver Filter Press, 12" to 42" square, wood and iron
3—Hardinge Mills, 2' x 8", 4½' x 16", 4½' x 24"
3—Sharples No. 6 Centrifuges
3—De Laval No. 600 and 700 Clarifiers
6—Tolhurst 32", 40" Suspended Type Centrifugals
3—Buflovak Vacuum Drum Dryers, 48" x 40", 5' x 6'
2—Swenson Continuous Crystallizers, 24" x 30'
2—1750 gal. Lead Lined Closed Tanks
3—Tyler Screens; 1 Rotap, 1—4' x 5', 1—3' x 5'
2—Vallez Filters, 350, 450 sq. ft.

Partial list only. Your inquiries solicited.

BRiLL
Equipment Co.
225 West 34th Street, New York 1, N. Y.

FOR SALE

SPECIAL PURCHASE

12—Anderson #1 Expellers with A. C. motors and starters.
1—Cutter #4 Steam Tube Dryer.
9—Direct heat ROTARY DRYERS 4' x 30', 5' x 30, 70" x 30', 6 x 60'.
5—ROTARY KILNS, 6' x 60', 8' x 126', 8' x 135'
10—ROTARY VACUUM DRYERS; 3—Buffalo 5' x 20'; 3—Devine 4' x 25'; 1—Devine 4' x 30'; 1—Struthers Wells 30" x 12'.
3—Hardinge BALL MILLS. 4' x 6" x 16", 5' x 22", also 6' x 12' Rod Mill.
2—8' x 30" Hardinge Conical Silex Lined PEBBLE MILLS, also 6' x 36".
1—5' x 13' PEBBLE or TUBE MILL, with open trunnions.
1—World automatic rotary LABELER m. d.
1—1000 gal. lead-lined closed TANK, lead coils.
1—All Copper 5' dia. VACUUM PAN with condenser and vac. pump.
1—500 gal. jack. agit. AUTOCLAVE, steel hammer welded construction 200 lb. jack. press. 550 lb. internal press.
1—Komarek - Greaves BRIQUETTE PRESS, with 2-32" x 24" face, rolls for egg-shaped briquettes, rated 25 tons per hour.
1—2500 lb. Horizontal Steel Dry POWDER MIXER, spiral agitator.

Only a partial list.

SPECIALS

3—Bucket Elevators steel enclosed—78', 45', 35' c-c. including smaller elevators, screw conveyors, etc.

2—No. 0 Raymond Beater type Pulverizers, each equipped with air classifier, exhauster, cyclone collector, tubular dust collector and inter-connecting piping.

1 Kritzer Lime Hydrator, 6 cylinders, capac. 6 tons per hour.

1—Sturtevant Rock Emery Mill with 40 H. P. Motor.

3-60-440 volt Motors and Starting Equipment will be included with all of the above machines.

All Other Bucket Elevators, Screw Conveyors, etc., included.

WANTED
YOUR IDLE MACHINES
Help create those jobs!
Send us your list
NOW

Send for latest issue of "Consolidated News" listing our regular stock of Machinery.

Visit our 8-acre Shop and Warehouse at Newark, N. J.

Consolidated Products Co., Inc.
14-18 Park Row New York 7, N. Y.
We Buy and Sell from a Single Item to a Complete Plant

AUTOCLAVES

1—42" dia. x 24'-4" Vertical, Forge Welded Steel, 600 lbs. Pressure—1300 gals.
1—4' x 6' Vertical, Iron Body, Steel Jacketed, 200 lbs. Pressure—600 gals.
1—6' x 15' Vertical Steel, Jacketed, 125 lbs. Pressure—3400 gals.
2—3' x 10' Horizontal, Steel, Jacketed, 300 lbs. Pressure—800 gals.
1—10' x 25' Vertical or Horizontal, Forge Welded Steel, Jacketed, 100 lbs. Pressure.

AGITATOR DRIVES

1—De Laval Type E Vertical Worm Gear. Ratio 70 to 1, 1200 R.P.M. Imput—10 H.P.
1—D.O. James—Size 1300 Vertical Worm Gear, Ratio 62 to 1, with base plate for 5 H.P. motor drive.
1—General Electric Vertical Gear Reduction Output Speed 5 R.P.M.—7½ H.P. G.E. Motor—Totally Enclosed—220 volts—3 phase—60 cycle.

CONDENSERS

1—Goubert Iron Body Condenser, 1¼" Brass Tubing, 330 sq. ft. Surface.
1—Devine Unit Surface Condenser, ⅞" Copper Tubing, 120 sq. ft. Surface.
1—All Copper Condenser, 1¼" Tubing, 300 sq. ft. Surface.

CRYSTALLIZERS

4—4' x 24' x 2'6" Deep Stainless Clad Steel, Jacketed—1800 gals.

DRYERS

3—Barlett & Snow Vertical Steel, Jacketed, 10' dia. x 4' high, Agitators, Reducers, 2 H.P. Motors.

EXTRACTORS

6—Burkhardt & Vierson, 40" dia., with bronze, rubber-covered and Lith-coated baskets.
1—King & Gerber, 38" dia. with Bronze Basket.

FRACTIONATING COLUMNS

1—18" dia.—Cast Iron—with Dephlegmator—13 sections, each 6" high—2 top & bottom sections each 18½" high.

KETTLES

1—4' dia. x 7' deep, open top, jacketed steel kettle, bottom outlet, no agitator or drive. 700 gals. capacity.
1—6'-9" dia. x 9'-0' deep, "Lehigh" Cast Iron Kettle with 2 Heating Coils, Agitator & Drive, 2500 gals. capacity.
1—6' dia. x 8' deep Steel Kettle with removable Head, 1600 gals. capacity.
1—6' dia. x 4' deep copper kettle with steel jacketed agitator or drive.

MILLS

1—16" Style D Schutz O'Neill Pulverizing Mill.
1—20" Style D Schutz O'Neill Pulverizing Mill.
1—Raymond Impact Mill, Direct Drive.
1—No. 21 Quaker City Hammer Mill.
1—15" x 8" Jeffrey Rigid Hammer Mill.
1—Stokes No. 43 Granulator.
1—Robinson Unique Jr. Grinder.

PUMPS

1—Wilfley Model AB Centrifugal—7½ H.P. motor—2" inlet, 1½" discharge.
1—Shriver Diaphragm 8A—Rubber lined, 90 gals., motor chain drive.
4—Vacuum single phase stokes—size 8" x 6", pulley drive.
1—Quimby 4 stage Centrifugal, 800 gals.—75 H.P. G.E. motor.
1—American Well 2 stage Centrifugal, 350 gal. 30 H.P.G.E. motor, Magnetic Starter.
2—Gould Triplex Plunger—size 8" x 10"—400 gals. Pulley Drive.
1—Gould Triplex Plunger—size 3" x 4"—25 gals. V Belt Drive.
1—Quimby Screw Type—size 2"—5 G.P.M.—50' head—motor drive.

ROTARY DRYER OR KILN

1—8' dia. x 40' long Horizontal Rotary Dryer, ½" shell, complete with tires, ring gear, rollers gearing, base plates.

DURIRON PIPE AND FITTINGS

Sizes 1", 2", 2½", flanged.

EMSCO EQUIPMENT COMPANY

Emil A. Schroth, Owner

49 HYATT AVE., NEWARK 5, N. J.

Phone Mitchell 2-3536

BRAND NEW

OLIVER HOPPER

DEWATERERS

8'-0" Dia. x 6'-0" Face—100 sq. ft. Area complete with varispeed drive and supporting frame. Acid-proof construction. Write for Drwgs., Pictures.

•

Stainless Steel Pasteurizing Equipment incl. Holding Tank, Precision Heater, Preheater and Circulator.

Single Drum Dryer, Stainless Steel. Proctor-Schwartz Continuous "Airlay" Dryer . . . Stainless Steel Freeze Roll.

•

USED & REBUILT

8'4" to 10'0" STEEL COLUMN containing 19—8'4" dia. and 9—10'0" dia. Bubble Cap Type Plates. Drawings available.

TANKS, COPPER, STEEL, BRASS, ALUMINUM, STAINLESS—100 to 10,000 Gal.

POT STILLS, COPPER. Large Selection of sizes.

PUMPS — CENTRIFUGAL AND STEAM, all sizes. Bronze or iron.

YEAST CULTURE MACHINE — All copper. Like new.

ACE OIL BURNER—Excellent condition.

9—COIL-TYPE VACUUM PANS: (Complete with Condensers. Catch-alls, etc.) Copper & cast iron.

2—WORTHINGTON CONDENSERS. 1,150 sq. ft. surface each. Others from 100 to 1,000 sq. ft. of surface.

CLOSE-OUT: VALVES — ALL SIZES — GATE AND GLOBE

NEW COPPER AND STAINLESS STEEL

Large stocks new copper and stainless steel sheets, plates, tubing for immediate fabrication of your process equipment requirements.

Write for Our Complete List

ORELAND EQUIPMENT CO.

P. O. BOX "E", ORELAND, PENNA.

"SPECIALS"

4—Sharples #16V Stainless Steel Super Centrifuges, motor driven, for prompt shipment. These units have seen less than one year service.

1—Oliver Rotary Filter 3' x 1'.

Send for our latest bulletins.

We Buy Your Surplus

MACHINERY & EQUIPMENT CORPORATION (of N. Y.)

533 West Broadway New York 12, N. Y.

GRamercy 5-6680

100—Box & Gondola Cars
128—10,000 & 8,000 gal. Tank Cars
2—2000 to 4000-gal. Emulsion Colloid Mills
6-100-150 & 200 H.P. Diesel Units
343 KW 3/60/2300 F. M. Diesel
480 KW 2300 V Diesel Generator
Raymond No. 0 Automatic Pulverizer
5' x 33' Steam Jacketed Vacuum Dryer
8—3 x 4 and 4 x 7 Hummer Screens
3 x 30, 3½ x 24, 5½ x 60, 6 x 40 and 6 x 59 Direct Heat Dryers
18 x 36 & 42 x 10 Acme Jaw Crushers
24" Blast Furnace with movable curb for Lead, Tin and similar metals
20 H. P. Charlotte 1½ in. Colloid Mill
1 yd. P. & H. 50' Boom Cat. Crane

STORAGE TANKS

14—10,000, 15,000, 20,000 and 26,000-gal. Cap. Horizontal and Vertical

AIR COMPRESSORS

Electric—540, 676, 1,000 and 1,578 ft.
Diesel—360, 500, 700 and 1,000 ft.

R. C. STANHOPE, INC.

60 East 42nd St. New York, N. Y.

4—Heavy riveted and welded horizontal steel tanks, 10'6" dia. x 30'2" long, bulged heads, 1" thickness throughout, built for 250# pressure.

1—Welded ammonia pressure tank 4' x 34', ¾" shell, 1" bulged heads, designed for 250# sq. in.

1—Welded pressure vessel 6' x 37'7", 7/16" shell, 9/16" dished heads, suitable for 90# pressure.

New and used steel pipe and tubing, steel buildings, wood and steel tanks.

JOS. GREENSPON'S SON PIPE CORP.

National Stock Yards,
St. Clair County, Ill.

---

1 — Practically new Hardinge Conical Mill for sale.

Box 1885

Chemical Industries, 522 Fifth Ave., New York 18, N. Y.

AVAILABLE

1—Raymond 5-roll high side Pulverizer.
2—(New) 24 x 48" Vibrating Screens.
3—26, 28, 40" copper basket Centrifugals.
1—24" Mikro Pulverizer—belt drive.
2—#600 De Laval Clarifiers.
3—3-roll Mills: 16x40 and 12x30".
1—36" Johnson 42-plate rec. Filter Press.
2—4 x 6' Atmospheric Drum Dryers.
4—Lead-lined Tanks, 400 and 1000-gal.
1—#5 Sweetland Filter.
2—Oliver Filters: 5x4' and 6x4'.
1—Union 10x20x12" Dry Vacuum Pump.
1—3x15' direct heat Rotary Dryer.
4—Water Stills: 10 and 25 GPH.
3—10-cup International Centrifuges.
1—10 gal. Bufflovac jac. Autoclave.
What equipment have you for sale?

LOEB EQUIPMENT SUPPLY CO.

920 North Marshfield Ave., Chicago 22, Ill.

We Buy and Sell at Any Point New and Used Tight and Slack Barrels; Steel Drums and Cans.

BUCKEYE COOPERAGE CO.

3800 Orange Avenue
Cleveland 15, Ohio

VALVES

New and Reconditioned Iron and Steel
ALL TYPES AND SIZES
ALSO FITTINGS
Tested and Guaranteed

APEX IRON & METAL COMPANY
2204 S. Laflin Street
Chicago 8, Illinois

LIQUIDATION FOOD and PROCESS EQUIPMENT

ENTIRE STOCK MUST BE SOLD AT ONCE

Our gigantic building and several hundred others in our vicinity have been purchased by the New York Housing Authority for a low cost model building project.

We are forced to move hundreds of tons of equipment, plus our shops, offices, etc. In order to save the almost prohibitive costs of such a moving operation, we are now planning a full scale LIQUIDATION.

However, if you can use any of the units now in stock, we are prepared to cut prices drastically to ship them to you instead of to our new location of which we will advise you later in this publication. Act now and save.

AGITATORS	LABELERS
BLOWERS	MILLS—GRINDERS
COLLOID MILLS	MIXERS
CAPPERS	PACKAGING UNITS
DRYERS	PUMPS
FILLERS	SIFTERS—SCREENS
FILTER PRESSES	STILLS
KETTLES	VACUUM PUMPS

Send for Complete Stock List or Wire Us Your Inquiry Collect

FIRST MACHINERY CORP.
EAST 9th STREET & EAST RIVER DRIVE, NEW YORK

EAST RIVER DRIVE EAST 9th ST., N. Y.

UNION Rebuilt Machinery Established 1912

SPECIALS

UNION Rebuilt Machinery Established 1912

Just Received

Pfaudler 150 gal. Jacketed Glass Lined Vacuum Pan.
Elgin 24 spout Rotary Vacuum Filling Machine.
Gayco Air Separator.
Pfaudler 200-300 gallon Jacketed Glass Lined Tanks, with M. D. Agitators.
Schutz O'Neill, Jay Bee, Williams Pulverizers.
J. H. Day 3 Roll 12" x 30", 16" x 40" Mill, Motor driven with motor.
Kent 3 Roll 12" x 30", 16" x 40" Mill, Motor driven with motor.
J. H. Day 3½ Ton Paste Mixer.
Karl Keifer Automatic Bottle Rinser and Sterilizer.
Mullers and Chasers 2 ft. to 6 ft. Sizes.
Ermold and World Semi-Automatic Labeling Machines.
Copper and Aluminum Steam Jacketed Kettles, with and without Agitators.
Johnson, Seitz and Oliver Sweetland Filter Presses.
Schutz O'Neill, Rotex and Allis-Chalmers Lowhead Sifters.
Package Machinery Co. FA Adjustable Wrapper.

All Machines Are Offered Subject to Prior Sale.

Write for Latest Circular - Wire Collect for Prices and Details

UNION STANDARD EQUIPMENT COMPANY
318-322 LAFAYETTE STREET, NEW YORK

HELP WANTED

Have a situation in South America for a man experienced in electrostatic precipitation of dust, soot and smoke.

Box 2075, Chemical Industries
522 Fifth Avenue, New York 18, N. Y.

SALESMEN

with technical training
wanted to handle
SHELL CHEMICAL
products
Several territories open
Apply
R. W. GREEFF & CO., INC.
10 Rockefeller Plaza
New York 20, N. Y.

FOR SALE

2—24" Mikro—Pulverizers.

Box 2076, Chemical Industries
522 Fifth Ave., New York 18, N. Y.

HELP WANTED

SALESMEN: Large manufacturer Sanitary Chemicals, selling to distributors has opening for experienced men. Good opportunities in established territories. Must be capable of earning in excess $5,000. State experience and references in first letter. Box 2070, Chemical Industries, 522 Fifth Avenue, New York 18, N. Y.

INFORMATION for HELP WANTED & SITUATION WANTED ADS

20 words (or less) $1.00 per issue, extra words 5¢ each plus 6 words to be added for box address and 10¢ for postage. All remittances and copy must be received by the 12th of the month preceding publication. These rates do not apply to display or white space ads or other classified ads which are sold at $7.00 per inch.

CHEMICAL INDUSTRIES
522 Fifth Ave., New York 18, N. Y.

WANTED TO BUY

Wanted—Surplus
RAW MATERIALS
Wastes—By-Products—Residues of All Kinds.
BOX No. 2014
Chemical Industries, 522 Fifth Ave., New York 18, N. Y.

WE BUY SURPLUS CHEMICALS

20 Years of Service to
Manufacturers and Consumers Having Excess Stocks of

CHEMICALS
DRUGS
GUMS
OILS
SOLVENTS
WAXES

BARCLAY
CHEMICAL COMPANY
75 VARICK ST., NEW YORK 13, N.Y.
WOrth 4-5120

WANTED
NEW CHEMICAL PRODUCTS

Intermediates or compounds selling to industrial and commercial markets.

Our client established 30 years, manufactures to standards of highest quality.

Please write. Communications confidential. We are fully compensated by our client.

CHARLES H. WELLING & CO., Inc.
52 Vanderbilt Avenue
New York 17, N. Y.
New Products — New Processes

PATENTS



PROFESSIONAL DIRECTORY

DR. HENRY W. LOHSE
Research, Development and Surveys
Bulletin No. 10, Unit Processes
Synthesis Catalysis.
Copy free on request
67 Yonge St., Toronto, Ontario
Telephone: Elgin 4797
U. S. Associates Located at Chicago and Philadelphia

MOLNAR LABORATORIES
Analytical and Consulting Chemists
Phenol Coefficient Tests
Hormone Assays
PENICILLIN ASSAYS
Investigation, Control and Development of Pharmaceutical Products
211 East 19th St., N. Y. Gramercy 5-1930

NEW PRODUCTS

Johan Bjorksten PH.D.
CHEMISTS

A group of successful development chemists is at your service for development of new or improvement of old products.

BJORKSTEN LABORATORIES
185 N. Wabash Ave., Chicago 1, Illinois

FOSTER D. SNELL, INC.
Our chemical, bacteriological, engineering and medical staff with completely equipped laboratories are prepared to render you Every Form of Chemical Service.
Ask for
"The Consulting Chemist and Your Business"
315 Washington Street Brooklyn 1, N. Y.

ASSOCIATION OF CONSULTING CHEMISTS AND CHEMICAL ENGINEERS, INC.
50 East 41st Street
Room 82
New York 17, N. Y.
LExington 2-1130
A Clearing House for Consultants
When in need of a consultant address the Association
No charge for this service.
The membership, located from coast to coast, comprises specialists in all fields.

RALPH L. EVANS ASSOCIATES
70 Chemists and Engineers
Fully Equipped
Laboratory and Pilot Plant
Organic and Inorganic Chemicals
Condensation Products
Continuous Processes
High Pressure
Raw Material Substitution
250 E. 43rd Street, New York 17, N. Y
Tex. MUrray Hill 3-0072

HORACE J. HALLOWELL
Analytical
and Consulting Chemist
323 Main St.
Danbury, Conn.
Member Association of Consulting Chemists & Chemical Engineers

ASK YOURSELF FRANKLY
"WILL IT PAY TO SELL MY BUSINESS?"

TODAY'S unusual industrial conditions may well justify you in turning your business—FOR CASH—to new management. As a reputable operating organization of long experience, with substantial capital, we can bring opportunity for increased company expansion and greater profit . . . while you are relieved of heavy expense and worry. Personnel held intact whenever possible.

**ALL discussions and negotiations strictly confidential.*

BOX 1210 - 1474 BROADWAY, N. Y.

Chase Joins Hutchinson Staff

Irving Edgar Chase has been named a member of the executive staff of D. W. Hutchinson & Co., Inc., Essential Oils, New York. Mr. Chase was formerly director of sales for the William D. Neuberg Co., and previously assistant export manager of Magnus, Mabee & Reynard, Inc., New York. For a number of years he was engaged with W. R. Grace & Co.

Karthauser Returns to Bayer

Harold Karthauser has returned to The Bayer Company Division of Sterling Drug Inc., as assistant superintendent of the packaging plant in Trenton, N. J., after two and a half years service with the Navy. Before he enlisted, Mr. Karthauser was assistant in the New York office. He has been with Bayer since 1931.



©1945 Marine Magnesium Products Corp.

INDEX *of* ADVERTISERS

Accreylon Co. ... 1103
Allied Asphalt & Mineral Corp. ... 1119
Amecco Chemicals, Inc. ... 1088
American British Chemicals Supplies, Inc. Back of insert facing page 1033
American Cyanamid & Chemical Corp. ... 998, 999, and 1091
American Potash & Chemical Corp. ... 1129
Ansul Chemical Co. ... 1120
Apex Iron & Metal Co. ... 1155
Arnold-Hoffman & Co., Inc. ... 1139
Aromatics Division, General Drug Co. ... 1127
Association of Consulting Chemists & Chemical Engineers ... 1157
Atlas Powder Co. ... 993

Baker, J. T., Chemical Co. ... 995
Baker & Adamson, Division of General Chemical Co. ... 1007
Baker Castor Oil Co. ... 1087
Barclay Chemical Co. ... 1157
Barrett Division, Allied Chemical & Dye Corp. ... 1020
Beacon Co. ... 1093
Becco Sales Co. ... 1011, 1121
Bemis Bros. Bag Co. ... 1111
Bjorksten Laboratories ... 1157
Blaw-Knox Co. ... 1037
Bower, Henry, Chemical Mfg. Co. ... 1108
Brill Equipment Co. ... 1154
Buckeye Cooperage Co. ... 1155
Bump Pump Co. ... 1105
Burkart-Schier Chemical Co. ... 1159
Burke, Edward S. ... 1133

C. P. Chemical Solvents, Inc. ... 1153
Carbide & Carbon Chemicals Corp. ... 1022
Carborundum Co. ... 764
Celanese Corp. of America ... 1004 and 1005
Church & Dwight Co., Inc. ... 1105
Claflin, Alan A. ... 1153
Columbia Chemical Division, Pittsburgh Plate Glass Co. ... 1035
Columbia Organic Chemicals Co., Inc. ... 1139
Commercial Solvents Corp. ... 1048
Consolidated Chemical Industries Co. ... 1110
Consolidated Packaging Machinery Corp. ... 1115
Consolidated Products Co. ... 1154
Cornelius Products Co. ... 1092
Corning Glass Works ... 1001
Cowles Detergent Co. ... 1115
Crosby Naval Stores, Inc. ... 1119
Croton Chemical Corp. ... 1134
Crown Can Co. ... 1109

Dallal, D. S., & Co. ... 1108
Delton Products Corp. ... 1153
Diamond Alkali Co. ... 1029
Distributing & Trading Co. ... 1119
Doe & Ingalls, Inc. ... 1153
Dorr Co. ... 1122
Dow Chemical Co. ... 990, 1024, 1147
Drew, E. F., & Co., Inc. ... 1115
Du Gas Division Ansul Chemical Co. ... 1140
Dunkel, Paul A. & Co., Inc. ... 1117
Du Pont de Nemours, E. I., & Co. ... 1025

Eastern Steel Barrel Corp. ... 1145
Eastman Kodak Co. ... 1121
Edwal Laboratories, Inc. ... 1126
Eimer & Amend ... 1026
Emsco Equipment Co. ... 1155
Evans Chemetics, Inc. ... 1135
Evans, Ralph L., Associates ... 1157

Fairmount Chemical Co. ... 1153
Fergusson, Alex. C., Co. ... 1154
Fine Organics, Inc. ... 1121
First Machinery Corp. ... 1156
Fisher Scientific Co. ... 1026
Franks Chemical Products Co. ... 1145
Fritzsche Brothers, Inc. ... 1138
Fulton Bag & Cotton Mills ... 1152

General American Transportation Corp. ... 1009
General Ceramics and Steatite Corp. ... 1028
General Chemical Co. ... Inside Back Cover
General Drug Co., Aromatics Division ... 1127
Glascote Products, Inc. ... 1030
Glycerine Producers' Association ... 1013
Gray, William S., & Co. ... 1133
Greeff, R. W., & Co. ... 1139, 1156
Greenspon's Son Pipe Corp., Jos. ... 1155

Haering, D. W. & Co., Inc. ... 1137
Hallowell, Horace J. ... 1157
Hamilton Institute, Alexander ... 988
Hardesty Chemical Co., Inc. ... 987
Harshaw Chemical Co. ... 1152
Haveg Corp. ... 1113
Heekin Can Co. ... 1139
Hema Drug Co. ... 1153
Hercules Powder Co. ... 1003
Heyden Chemical Corp. ... 1083
Hooker Electrochemical Co. ... 1039
Huisking, Chas. L., & Co. ... 1133
Hunt Chemical Works, Inc. ... 1093

Industrial Chemical Sales Division, West Virginia Pulp & Paper Co. 1008
Industrial Raw Materials Co. ... 1154
Innis Speiden & Co. ... 1129
International Chemical Exposition ... 1043
International Minerals & Chemical Corp. ... 1099

Jefferson Lake Sulphur Co., Inc. ... 1152
Joliet Chemicals, Ltd. ... 994

INDEX *of* ADVERTISERS

Kaywoodie Co. 1019
Kelco Co. 1017
Kessler Chemical Co. 1125
Kidde, Walter, & Co., Inc. 1041
King, E. & F., & Co., Inc. 1153
Knight, Maurice A. 1131
Koppers Co. 1089

LaPine, Arthur S., & Co. 1153
Leeds & Northrup Co. 1124
Lemke, B. L., Co. 1149
Lithaloys Corp. 1090
Loeb Equipment Supply Co. 1155
Lohse, Dr. Henry W. 1157
Lucidol Corp. 1145

Machinery & Equipment Corp. 1155
Mallinckrodt Chemical Works 1015
Mann, George & Co., Inc. 1153
Marblehead Lime Co. 996
Marine Magnesium Products Corp. 1158
Mathieson Alkali Works, Inc. 986
Merck & Co., Inc. 1000
Merco Nordstrom ..... Insert between pages 1108 and 1109
Metalsalts Co. 1148
Mine & Smelter Supply Co. 1137
Moesch, Walter & Co. 1147
Molnar Laboratories 1157
Monsanto Chemical Co. 1077
Mutual Chemical Co. of America 989

National Aniline ..... Insert between pages 1032 and 1033
National Carbon Co. 1085
Natural Products Refining Co. 1044
Naylee Chemical Co. 1130
Neville Co. 1148
Niacet Chemicals Div. 1151
Niagara Alkali Co. ..... Insert between pages 992 and 993

Oil States Petroleum 1133
Oldbury Electro Chemical Co. 1108
Oreland Equipment Co. 1155
Oronite Chemical Co. 1023
Otis-McAllister Co. 1149

Pacific Coast Borax Co. 992
Patterson Kelley Co. 1095
Pennsylvania Coal Products Co. 1135
Pennsylvania Salt Manufacturing Co. 1027
Perry Equipment and Supply Co. 1154
Peters Chemical Manufacturing Co. 1153
Petroleum Specialties, Inc. 1135
Pfizer, Charles, & Co., Inc. 1034
Phelps Dodge Refining Corp. 1134
Philadelphia Quartz Co. 1040
Pittsburgh Plate Glass Co., Columbia Chemical Division 1035
Polachek, Z. H. 1157
Porocel Corp. 1002, 1130
Powell, William, Co. 1042
Prior Chemical Corp. 1031
Proctor & Schwartz, Inc. 1103
Prufcoat Laboratories, Inc. 1036

Radio Receptor Co., Inc. 1151
Raymond Bag Co. 1171
Reichhold Chemicals, Inc. 1016
Reilly Tar & Chemical Corp. 1018
Republic Chemical Corp. 1159
Robins Chemical Co. 1006
Rosenthal, H. H. Co. 1135

St. Regis Paper Co. 1107
Saranac Machine Co. 1134
Sharples Chemicals, Inc. ..... Insert between pages 1016 and 1017
Shell Chemical, Division of Shell Union Oil Corp. 1032
Sherwood Refining Co., Inc. 1133
Signode Steel Strapping Co. 1097
Snell, Foster D., Inc. 1157
Sobin, Irving M., Co., Inc. 1153
Solvay Sales Corp. ..... Inside Front Cover
Standard Alcohol Co. 1152
Stanhope, R. C., Inc. 1155
Starkweather, J. U., Co. 1153
Stauffer Chemical Co. 1047
Sundheimer, Henry, Inc. 1080

Takamine Laboratories, Inc. 1145
Talk-A-Phone Mfg. Co. 1128
Texas Gulf Sulphur Co., Inc. 1117
Titanium Alloy Manufacturing Co. 1033
Turner, Joseph, & Co. 1093

Union Bay State Chemical Co. 1010
Union Standard Equipment Co. 1156
U. S. Industrial Chemicals, Inc. ..... 1012; Insert between pages 1092 and 1093
U. S. Potash Co. 1117

Van Range, John, Co. 1137
Veith Chemical Co. 1154
Velsicol Corp. 1101
Victor Chemical Works 1079
Virginia-Carolina Chemical Corp. 1021
Vitamoil Laboratory, Inc. 1150

Welch, Holme & Clark Co., Inc. 1086
Welling, Charles H., & Co., Inc. 1157
Wellington Sears Co 1014
Wellman Engineering Co. 1150
Westvaco Chlorine Products Corp. 985
Westville Laboratories 1153
Witco Chemical Co. ..... Back Cover
Wyandotte Chemicals Corp. 997

Busy Executives

read

CHEMICAL INDUSTRIES

Always at their finger tips, CHEMICAL INDUSTRIES is a dependable source of information. New chemicals, new uses, chemical reports and trends are but a few of the topics authoritatively discussed.

Every executive in the chemical industry will profit by a personal subscription. Prices are $4.00 a year; $6.00 for two years.

BURKOL

SYNTHETIC DETERGENT

for wetting, scouring, bleaching, dyeing. cottons, rayons and mixed goods.

Effective in hard water, acid or alkaline bath.

BURKART-SCHIER CHEMICAL CO.
CHATTANOOGA, TENNESSEE

SPOT STOCKS

CRESYLIC ACID
METHANOL, Natural Synthetic
ETHYLENE DICHLORIDE
MENTHOL

Republic Chemical Corp.
94 Beekman Street, New York 7
Cable Address: Jaynivrad

"WE" – EDITORIALLY SPEAKING

WE LEARNED recently that our military services developed an all-glass land mine which was used successfully both in the European and Pacific wars. It's a wonder the enemy didn't see through that!

WE ALWAYS thought that laboratory technicians were people who wore white coats and peered intently into test tubes, the better to see precipitates and stuff. Now we read of a Miss Jones, laboratory technician, who wears blue dungarees (the editor violently objects to women in dungarees—or, rather, dungarees on women) and set sail November 7 in a thirty-foot ketch from Honolulu to San Francisco. Sailing the ocean blue may be fun, but we'll bet she misses those old familiar smells of the laboratory. She was also barefooted.

APROPOS of the current discussions of government-financed research, we give you a British editor's comment for what it is worth: "Governments cannot create men of genius in science, in industry, or in any other walk of life; it is doubtful whether they can even encourage such people. Perhaps all that governments can do is to refrain from legislation that makes the lot of the pioneers unendurable."

M.I.T. HAS an electromagnetic differential analyzer which weighs 100 tons and can automatically solve complex mathematical problems involving as many as eighteen variables. Next March we're going to dash up to Cambridge and feed our salary check stubs, our wife and children, our social security card, and our War Fund receipt into the gaping maw of this colossus. Maybe we'll get a reasonable answer for our income tax.

WE'VE HEARD of bounties on foxes, but not until now did we know that there is also a bounty on chemists. Abbott Laboratories, we learn, pays five bucks to an employee who brings in a worker that stays at least 30 days. If the fox—excuse us—the worker stays 120 days, the ante is raised another ten spot.

FROM THE burette of Time are falling the last few drops of 1945. May the end-point be reached about Christmas-time, suffusing you all with a warm, pink glow of health and joy. We have enjoyed setting down here various random thoughts and quotations for your amusement, and we hope that 1946 will endue you with the fortitude to struggle through another year's offerings!

Fifteen Years Ago
From Our Files of Dec., 1930

Per K. Frolich, head of the Standard Oil Development Co.'s chemical laboratories, receives the Grasselli Medal for his research work on high pressure synthesis.

Arthur D. Little, president, Arthur D. Little, Inc., is awarded the Perkin medal in recognition of his outstanding contributions to the field of chemical science.

Hoffman-LaRoche, Inc., celebrates the twenty-fifth anniversary of the founding of the company.

Kalbfleisch Corp., subsidiary of American Cyanamid, buys assets and business of A. Klipstein & Co. The business will be continued by a separate corporate entity, with H. L. Derby, president, Kalbfleisch Corp., as president and August Klipstein, previously president of A. Klipstein & Co., as vice-president.

Thirty Years Ago
From Our Files of Dec., 1915

General Chemical Co. announces plans to build a $100,000 sulfuric acid plant at South Chicago, and a $150,000 chemical plant at West Hammond.

E. I. du Pont de Nemours & Co., Inc., purchases plant of Arlington Co., Arlington, N. J., for manufacture of celluloid.

Insecticide & Disinfectant Manufacturers' Assn. holds its first annual meeting at the Hotel Astor, New York, with Frank Hemingway presiding.



A Merry Christmas and a Happy New Year!

Bob Taylor — John R. Thompson
Charles Podaro
Howard Johnson
Horace Saiders
Martha Newton
Bill Hamman
Frank C. Mahoney Jr.
Herman W. Zabel
Bob Baldwin
E. Mary Irons
Don Harway

PATENTS AND TRADEMARKS

Abstracts of U. S. Chemical Patents

A Complete Checklist Covering Chemical Products and Processes

Printed copies of patents are available from the Patent Office at 10 cents each. Address the Commissioner of Patents, Washington, D. C., for copies and for general information concerning patents or trade-marks.

From Official Gazette—Vol. 578, Nos. 1, 2, 3, 4 (Sept. 4-Sept. 25)—p. 609

* *Polymers*

Polymerization of butadiene-1,3 hydrocarbons. No. 2,380,471. Waldo Semon to The B. F. Goodrich Co.

Catalyst for addition polymerization of unsaturated organic compounds, comprising water-soluble heavy metal salt combined with a derivative of a phosphorus oxyacid selected from salts and esters of phosphorus oxyacids. No. 2,380,473. William Stewart to The B. F. Goodrich Co.

Catalyst for addition polymerization of unsaturated organic compounds, comprising a water-soluble heavy metal salt combined with aliphatic keto substituted carboxylic acid. No. 2,380,474. William Stewart to The B. F. Goodrich Co.

Catalysts for addition polymerization of unsaturated organic compounds.

Hot and cold workable alloys, characterized by superior tensile strength, ductility and toughness in annealed condition as compared to zinc, having copper, silver, metal of group of tellurium and selenium, balance being zinc. No. 2,380,920. Edward Bunn to Revere Copper and Brass, Inc.

Zinc base alloys containing 0.1 to 5% copper, 0.02 to 0.8% substance of group of tellurium and selenium, balance being zinc. No. 2,380,921. Edward Bunn to Revere Copper and Brass, Inc.

Zinc base alloys having copper, aluminum, and antimony, balance being zinc. No. 2,380,922. Edward Bunn to Revere Copper and Brass, Inc.

* *Processes and Methods*

Removing liquid hydrocarbon contained in aqueous detergent solution tending to foam when concentration of liquid hydrocarbon in solution is less than minimum foam-breaking concentration of said hydrocarbon, which comprises passing solution down through evaporating column countercurrently to a flow of hot inert gaseous evaporating medium. No. 2,381,658. William Fessler to The Solvay Process Co.

Liquid supplying means adapted to supply clarified liquid from which removable solids have been separated, which comprises ejector means including jet means and pump means arranged to force liquid through said jet means, etc. No. 2,381,760. Allen Latham, Jr. to Arthur D. Little, Inc.

Continuous wax separation process including continuous forming of emulsion of different melting point waxes, a chilling non-solvent liquid and an inert gas; steps for obtaining different melting point wax fractions from emulsion. No. 2,380,078. August Henry Schutte.

Method of evaluating content of gas reservoirs. No. 2,380,081. James Sloan to Houston Laboratories.

Effecting purification of solvent between extraction steps by dividing body of solvent, cooling portion of solvent to a temperature below that of remainder, removing impurities precipitated by cooling from divided portion, cooling remainder of solvent to a temperature higher than that to which said last-mentioned divided portion is cooled, etc. No. 2,380,139. Charles Ambler to The Sharples Corp.

Gas diffusion means for liquid storage tanks. No. 2,380,176. Sigurd Helseth and Stanley Fauver to Industrial Rayon Corp.

Mechanically recovering fibers from a suspension thereof, and without addition of a chemically reacting reagent thereto. No. 2,380,252. George McBride to Infilco Inc.

Treating and removing finely divided solid material from a catalyst using inert stripping gas. No. 2,380,324. John Munday to Standard Oil Development Co.

Cyclic process involving alternate endothermic and exothermic reaction periods for treating a liquid or liquefiable heavy hydrocarbon charge to remove tarry and coky material therefrom and produce clean distillate stock. No. 2,380,391. John Bates to Houdry Process Corp.

Refining fatty material comprising saponifying free fatty acids and glycerides present in a fat-soluble vitamin-containing marine oil, removing unsaponified oil from resulting soap and extracting soap-free oil with organic polar solvent. No. 2,380,411. Loran Buxton to National Oil Products Co.

Producing high iodine value oils from fish oils which comprises selectively saponifying fish oil by means of alkali to split saturated glycerides and separating unsaponified fraction from soap mass. No. 2,380,412. Loran Buxton to National Oil Products Co.

Increasing iodine value of animal and vegetable oils which comprises selectively saponifying oil selected from animal and vegetable oils by means of an alkali to split saturated glycerides. No. 2,380,413. Loran Buxton to National Oil Products Co.

Continuous saponification which comprises mixing saponifiable material, a saponifying alkali, and a volatile diluent, heating to effect saponification, etc. No. 2,380,650. Joseph Jacobs to Autooxygen, Inc.

Continuous process of carbonization. No. 2,380,930. Arthur Andersen and Norman Fasken to Shawinigan Chemicals Ltd.

Stainless steel electrolytic polishing method comprising making steel anode in electrolyte consisting of solution of chromic acid and water, and of water solution of acid of acetic and formic acids. No. 2,381,167. Charles Horwedel and William Resch to The American Steel and Wire Co. of New Jersey.

Process wherein fluid hydrocarbons are contacted and mixed with acidic fluid in a confined zone. No. 2,381,168. Lyman Huff to Universal Oil Products Co.

Operating continuous grinding system to pulverize material, where material varies in size between substantial limits. No. 2,381,351. Harlowe Hardinge to Hardinge Co. Inc.

Producing anisotropic properties in ferro-magnetic material such that magnetic characteristics are enhanced in different directions in parallel

* *Continued from Vol. 576, Nos. 2, 3, 4, 5; Vol. 577, No. 1.*

Patents Available for License or Sale

The Patent Office is regularly publishing a Register of Patents Available for Licensing or Sale. Patents concerning chemical products and processes appear below.

October 16, 1945

Pat. 2,330,531. **Means for Identifying Documents.** Patented Sept. 28, 1943. Paper substantially intended for adaption to printed legal forms or documents. Has chemically treated portions to which signatures and fingerprints are to be affixed. After signatures and fingerprints have been affixed they are further sprayed.

Pat. 2,370,382. **Rejuvenating and Re-Inking Ribbons for Typewriters and the Like.** Patented Feb. 27, 1945. A device which re-inks typewriter ribbons without removing same from machine. A housing containing an inking cartridge is held by gripping members against surface of ribbon thus re-inking itself by constant passage from spool to spool. Cartridge and housing member are renewable. (Owner) Adolph F. von Soden, 1005 James Oviatt Bldg., 617 S. Olive St., Los Angeles 14, Calif. Groups 35—72; 39—55. Reg. No. 439.

Pat. 2,319,562. **Stable Crystalline Anhydrous Alpha Lactose Product and Process.** Patented May 18, 1943. A new form of lactose, somewhat sweeter and more soluble than the ordinary milk sugar of commerce. Patent covers process and product. Groups 20—25; 35—51. Reg. No. 445.

Pats. 2,181,838 and 2,181,839. **Wine Process.** Patented Nov. 28, 1939. Process makes good sherry from cheap Eastern Concord grapes in a short period and with less expense. Greater output from given equipment reduces cost of production. Groups 20—84; 35—51. Reg. Nos. 447 and 448.

Pat. 2,344,895. **Basic Calcium Arsenate.** Patented Mar. 21, 1944. Invention relates to insecticides and fungicides of the arsenic type. Advantage of this easily manufactured product is that it is a true chemical compound, not a mixture, and produces the uniformity of results desirable in the field, while mixtures now used tend to be erratic in behavior. Group 28—33. Reg. No. 449.

October 23, 1945

Pat. 2,207,074. **Oxygen Generating Composition.** Patented July 9, 1940. Dry, stable composition comprises in preponderant amount a sodium perborate and an acid reacting aluminum sulfate. Dissolves readily in small amount of water with an immediate release of substantially all available oxygen and neutralization of substantially all liberated alkali, gives a solution having a pH value of about 6.3 and produces no harmful effect upon the mucous membrane when used as a dentifrice. (Owner) Nathan Smith, 47 Ann St., New York 7, N. Y. Groups 28—32; 39—17. Reg. No. 455.

Pat. 2,373,526. **Pump.** Patented Apr. 10, 1945. Vertically mounted bellows of the accordion type, motor operated by means of a rod pivotally connected with a bellows at one end and a gear on frame at the other. Liquid is forced in and out of the bellows by extension and contraction of bellows; air release valve mounted on top of bellows; inlet and outlet pipes are fitted with check valves. Bellows may be constructed of a suitable material to withstand heavy pressures. (Owner) Andrew Zellos, 136 Main St., Ossining, N. Y. Groups 23—86; 30—41; 35—61. Reg. No. 458.

October 30, 1945

Pat. 2,361,894. **Dehydrator.** Patented Oct. 31, 1944. Previously cut or chopped material is thrown by rotating motion against the flexible and porous side walls, such as fabric, of a bowl-shaped container mounted on a shaft (attached to a means of power) to a fixed stand.

Pat. 2,350,152. **Wax Applicator.** Patented May 30, 1944. Hand operated. Consists of pervious bag filled with wax which moves over floor. Bag passes between two closely spaced parallel bars mounted on geared frame. By pressure of lever attached to spring on handle, pawl is released and gears are unlocked. Turning of gear causes winding of bag and wax is extruded through fabric. Inventor claims easily handled and use will save considerable time. (Owner) Edward J. Dahlstrom, 1205 O'Farrell St., San Francisco, Calif. Groups 23—94; 28—93. Reg. No. 487.

Pat. 1,859,653. **Chemical Combination of Boric Acid and Potassium Acid Tartrate, and Process of Preparing Same.** Patented May 24, 1932. To control abnormal urinary alkalinity by employing an acidifier taken orally to control phosphaturia (the presence of calcium or magnesium phosphates in the urine). The patent states the effect of former alkalizers was hindered as dosages had to be limited (large dosages were apt to cause gastric dis-

planar zones, in comparison with like characteristics in directions having a component at right angles to such planar zones. No. 2,381,363. Donald Oliver to William Jessop & Sons Ltd.

Treating molten anhydrous soap which comprises extruding molten anhydrous soap through plurality of orifices into body of aqueous cooling liquid, maintaining strings of soap so formed out of contact with each other. No. 2,381,368. John Ross to Colgate-Palmolive-Peet Co.

Recovering and conditioning for re-use asbestos fiber that has been used in composition of diaphragm overlying foraminous cathode of electrolytic cell producing chlorine and caustic alkali, etc. No. 2,381,369. James Sconce to Hooker Electrochemical Co.

Making hard lining for internal surface of a charge container of a mill for grinding hard material that may be used in carrying out a sintering or like method. No. 2,381,413. Hans Wolff to Aktiebolaget Hammarbylampan.

Coalescing foamy non-conducting liquids comprising projecting foamy liquid in stream from electrode nozzle having pointed member to adjacent electrode of extended flat area and charging electrodes to a high electric potential difference. No. 2,381,578. Lyle Dillon and Edward Ragatz to Union Oil Co. of California.

* *Rubber*

Antioxidant in rubber composition comprising rubber and product obtained by condensing butadiene-1,3 with a diarylamine in presence of an acidic condensation catalyst. No. 2,379,936. Arthur Sloan to The B. F. Goodrich Co.

Producing rubber derivatives of cyclized type, as evidenced by having same carbon-to-hydrogen ratio as rubber and having less chemical unsaturation than rubber and unsaturated rubber addition products of same percentage composition, which comprises forming a mixture of rubber, an alkali metal alum, phosphorus pentoxide and free sulphuric acid. No. 2,379,939. Roy Vance and Clement Damicone to The General Tire & Rubber Co.

Composite rubber-covered copper article in which effective barrier consisting of a continuous flexible resin coating containing in addition to resin an organic amine copper fixative is interposed between rubber and copper. No. 2,379,978. Albert Meyer to United States Rubber Co.

Antioxidants. No. 2,380,129. Frank Valentine, Jr. to United States Rubber Co.

A di-(arylamino) diaryl carbonate, an anti-oxidant. No. 2,380,130. Frank Valentine, Jr. to United States Rubber Co.

Synthetic rubber compositions containing rubber-like polymer from polymerizates of butadiene and copolymers of butadiene and another polymerizable compound containing olefinic linkage, and as softening agent a neutral polycarboxylic acid ester of an open chain monohydric unsaturated alcohol. No. 2,380,184. Kenneth Marple to Shell Development Co.

Treating unvulcanized rubber composition which comprises incorporating oil-soluble phenolate of a metal in iron family of group VIII with rubber. No. 2,380,299. Hector Evans and David Young to Standard Oil Development Co.

Preparing antioxidant from rice bran concentrate. No. 2,380,546. Wilbur Patterson and Martin Williamson to S. M. A. Corporation.

Vulcanizing rubbery material made by polymerization of a butadiene-1,3 hydrocarbon with compound containing single ethylenic double bond which comprises heating it in presence of sulfur and a 2-mercaptothiazoline, and in presence of member of monocarboxylic acids and their salts with metals capable of forming activating oxides. No. 2,381,059. Paul Jones to The B. F. Goodrich Co.

Electrical insulating material, vulcanizable composition containing one to two parts of mica for each part of rubber, and sulphur to give a hard vulcanized rubber. No. 2,381,163. Charles Harford to Jefferson Electric Co.

Cyclized rubber having admixed therewith to act as stabilizer the condensation product of aldehyde and polyalkylene polyamine. No. 2,381,180. Harold Osterhof to Wingfoot Corp.

Article comprising rubber part and metal part and, therebetween, bonding layer comprising cyclized rubber adhesive and organic diisocyanate. No. 2,381,186. Glen Roquemore to Wingfoot Corp.

Gasket material containing oil resistant butadiene-acrylonitrile copolymer of rubberlike characteristics, wood flour, plasticizer soluble in hydrocarbon fluids, and material insoluble in but capable of increasing in volume when in contact with hydrocarbon fluids, said material selected from natural rubber, and a butadiene styrene copolymer of rubberlike characteristics. No. 2,381,248. Roger Bascom to The Standard Products Co.

Forming small simply contoured molded cellular rubber articles from latex. No. 2,381,380. Mitchell Carter to The Firestone Tire & Rubber Co.

Vulcanization accelerator. No. 2,381,384. Edward Carr to The Firestone Tire & Rubber Co.

Vulcanizing rubber which comprises heating rubber and sulfur in presence of a thiocarbamyl primary amino sulfide. No. 2,381,392. George Smith, Jr. and Edward Carr to The Firestone Tire & Rubber Co.

Vulcanized rubber product prepared by heating rubber and sulfur in presence of a 2-mercapto-tetrahydrobenzothiazole. No. 2,381,397. George Smith Jr. to The Firestone Tire & Rubber Co.

Manufacture of sponge rubber which comprises, mixing with aqueous rubber dispersion fragments of a gel in which gelling agent is a water-insoluble aluminum pectate, molding and heat vulcanizing mass, thereby leaving cellular rubber structure. No. 2,381,706. Clarence Wilson to California Fruit Growers Exchange.

Retarding deterioration of organic substance which tends to deteriorate by absorption of oxygen from air which comprises incorporating therein a parasubstituted arylamino 2,2,4-trialkyl dihydroquinoline, said chemical being derived from reaction in presence of acidic catalyst of ketone with amino-substituted diarylamine. No. 2,381,771. Philip Paul to United States Rubber Co.

* *Specialties*

Fluid for fluid pressure systems consisting of 20% castor oil, 20% amyl alcohols and 60% diethylene glycol monoethyl ether and an acid neutralizer. No. 2,379,855. Charles Allderdice, Jr. to The Bell Co. Inc.

Adhesive sheet material comprising layer of fibrous material coated on both sides with a normally dry, flexible, non-tacky, heat-activatable adhesive comprising gutta percha and mixture of an adhesive agent selected from rosin, natural gum and wood pitch and a plasticizer selected from petroleum jelly and an insoluble metallic soap. No. 2,379,964. Edward Hole.

* *Continued from Vol. 576, Nos. 2, 3, 4, 5; Vol. 577, No. 1.*

turbances and could only be taken for short periods). Three preparations are cited. Group 28—31. Reg. 492.

Pat. 2,340,739. **Vapor Phase Catalytic Oxidation.** Patented Feb. 1, 1944. Relates to process of employing air dried to a selected low dewpoint, as an oxidizing medium to impede the deleterious effect of moisture and other impurities in the vapor phase of catalytic oxidation. Examples and process recited in patent. Groups 28—82—89; 29—22. Reg. No. 493.

Pat. 2,030,690. **Tar Acid Product and Process of Producing It.** Patented Feb. 11, 1936. Cresylic acid and similar analogous tar acids when freshly distilled are substantially water white. When treated with small amounts of maleic anhydride (before or after distillation) color is stabilized against change in storage or exposure to direct sunlight. Proportions recited in patent. Groups 28—82—89; 29—22. Reg. No. 494.

Pat. 2,162,276. **Method for the Preparation of Catalysts.** Patented June 13, 1939. Method produces catalyst by forming a water soluble acidic metallic oxide compound and an alkaline water soluble amine which coats carrier evenly with a metal oxide deposit without corroding enamel or porcelain vessel used in the coating operation. Method is such that tendency of the catalyst to depreciate by dusting is minimized. Since coating is porous the surface is larger for catalytic action. Though vanadium oxide is the chief active catalytic component inventor applies it to other oxides with similar acidic characteristics. Groups 28—82—89. Reg. No. 495.

Pat. 2,019,032. **Amine of High Color Stability and Process of Producing It.** Patented Oct. 29, 1935. By the addition of relatively small amounts of maleic anhydride prior to final distillation of amines, especially aromatic amines, it is possible to retard or possibly prevent the darkening during storage and thus give amines greater stability. Proportions recited in patent. Group 28—82—89. Reg. No. 496.

Pat. 2,209,908. **Contact Mass for Use in the Catalytic Vapor Phase Oxidation of Organic Compounds.** Patented July 30, 1940. Provides a solid improved contact mass for the catalytic production of acid anhydrides from organic materials, particularly from aromatic hydrocarbons, which maintain high initial activity over a long period of time even when operated at relatively high temperatures. Examples and tables shown in patent. Group 28—82—89. Reg. No. 497.

Pat. 2,206,377. **Catalytic Oxidation of Benzene.** Patented July 2, 1940. Method for accelerating the production of higher yields of maleic acid from benzene, which comprises passing benzene and air over a heated contact mass having a productive catalytic agent consisting essentially of higher oxides of vanadium and at least one compound of an alkali-forming metal. Examples given in patent. Group 28—82—83—89. Reg. No. 498.

Pat. 1,999,380. **Synthetic Resin and Process of Producing It.** Patented April 30, 1935. As a result of treating a monosaccharide, such as dextrose, with a dibasic organic acid or an anhydride of a dibasic acid, such as phthalic anhydride or maleic acid anhydride, a hard solid brown cake is produced easily reduced to a powder and readily soluble in water at 25° C. but insoluble in cold 95% ethyl alcohol. Character of product varies, depending on the raw materials selected and manner in which condensation is carried on. Other examples given in patent. Group 28—31—81—82—83—89. Reg. No. 499.

Pat. 1,914,941. **Air Drying Device.** Patented June 20, 1933. Intended to be used in an enclosed space, the device consists of a liquid collecting compartment over which is fitted a cover, upper part of which holds cakes of a deliquescent substance such as calcium chloride. The wall of the compartment has perforations which may be opened or closed at will, so air may circulate and moisture in air be removed by contact. Has many practical applications and can be used to inhibit rust, mold, etc. Will not harm film, cloth, leather, metal, soaps, or foods. Patent shows special containers. Groups 20—52—99; 28—89; 35—52—84; 40. Reg. No. 500.

Pat. 2,154,079. **Catalyst and Method of Producing It.** Patented April 11, 1939. The production of a pure silica carrier which is infusible, has suitable porosity and rough surface and which can be shaped as desired; contains no extraneous material to affect the action of the catalyst. Process recited in patent. Group 28—82—89. Reg. No. 501.

Pat. 2,222,561. **Method and Apparatus for Reconcentrating Hygroscopic Liquids.** Patented Nov. 19, 1940. Reg. No. 510.

The four patents listed above relate to a cabinet with bins storing a deliquescent substance, such as calcium chloride, which gradually feed into a number of horizontally arranged baskets allowing liquid and small fragments of calcium chloride to drop through to trays of dilute solution; excess is drained off. Moisture is partially removed when air is circulated by blower into contact with the hygroscopic solution and then forced through baskets of the calcium chloride for further dehumidifying, being cooled by circulating over a series of cooling surfaces to reduce the heat, until a predetermined point of moisture and temperature is reached. The several parts are removable for easy cleaning. Tipping or movement of carrier does not interfere with operation making it particularly adaptable to ships, trains, and the like. Groups 28—89; 33—61—65; 35—61—64—84; 36—21.

Pat. 2,027,093. **Deodorized Calcium Chloride.** Patented Jan. 7, 1936. Reg. No. 511.

Pat. 2,154,671. **Method for Forming Lumps of Calcium Chloride.** Patented April 18, 1939. Reg. No. 512.

Pat. 2,154,672. **Formed Bodies of Solid Calcium Chloride Hydrate.** Patented April 18, 1939. Reg. No. 513.

Pat. 2,154,708. **Apparatus for Making Formed Bodies of Calcium Chloride Hydrate or Analogous Material.** Patented April 18, 1939. Reg. No. 514.

November 6, 1945

Pat. 2,206,053. **Growth Exterminator.** Patented July 2, 1940. Weed killer with hollow handle having automatic cutting blade attached thereto and spring pressed valve in bore. Stems are cut by pressing blade into ground and poison carried in handle is sprayed on roots. (Owner) August M. Schroeder, 110 W. Lincoln, Peotone, Ill. Groups 33—52; 35—43—59. Reg. No. 522.

From Official Gazette—Vol. 578, Nos. 1, 2, 3, 4 (Sept. 4-Sept. 25)—p. 611

Preparing stable aqueous solution of a natural water soluble gum and pectin which comprises heating aqueous solution of gum to destroy enzymes present therein and thereafter incorporating pectin therewith. No. 2,380,115. Herbert Leo, Clarence Taylor and John Lindsey to Mutual Citrus Products Co.

Emulsion comprising wax; water; and a mixed emulsifier comprising a lipophilic partial ester of a fatty acid and a hydrophilic compound selected from polyhydric alcohols, polyhydroxylic cyclic inner ethers of polyhydric alcohols, etc., and a highly hydrophilic hydroxypoloxyethylene ether of a lipophilic partial ester of a fatty acid and a hydrophilic compound. No. 2,380,166. William Griffin to Atlas Powder Co.

Improved lubricant comprising mineral lubricating oil having dissolved therein, oil-soluble compound selected from saturated polynuclear monohydroxy alicarbocyclic alcohols and esters thereof. No. 2,380,205. Paul Van Ess and Ellis White to Shell Development Co.

Lubricating composition comprising mineral lubricating oil and oil-soluble co-polymer of a diolefin and an unsaturated ester. No. 2,380,304. Anthony Gleason to Standard Oil Development Co.

Lubricating composition comprising mineral lubricating oil and polyester derived by autocondensation of phenyl-hydroxy derivative of an unesterified aliphatic acid, to influence viscosity-temperature relationships of oil. No. 2,380,305. Anthony Gleason to Standard Oil Development Co.

Embalming and preservation of bodies, injecting into body a fluid containing a fluoragent and then inspecting body under fluorescigenous radiations to detect extent of diffusion of injected fluid. No. 2,380,351. David Williams to Robert Switzer and Joseph Switzer.

Lubricant comprising oil of lubricating viscosity and oil soluble halogen containing organic phosphorus compound of types R=N—N=P—R and R—N=P—N—R. No. 2,380,454. Bert Lincoln and Gordon Byrkit to The Lubri-Zol Development Corp.

Lubricant comprising mineral oil and oil-soluble sulfurized nitriles free of combined chlorine, said lubricant characterized by stability against settlement of sludge after long period of aging. No. 2,380,531. Samuel Jolly to Sun Oil Co.

Skin cleaning composition which comprises dried residual meal obtained as a by-product from commercial extraction of oil, protein, and carbohydrates from soybeans, said meal containing fibrous material and unextracted protein; and mildly alkaline salt of an alkali metal in solid undissolved form. No. 2,380,830. Stuart Fiedler to The Drackett Co.

Preparing improvement agent for lubricating oils, from alkylated phenols containing branched chain alkyl group, which comprises heating alkylated phenols with phosphorus trichloride and phosphorus sesquisulfide, etc. No. 2,380,878. Herschel Smith, Troy Cantrell to Gulf Oil Corp.

Lubricating grease capable of flowing under its own weight for machinery operating under conditions of local high temperature increase, and of frictional forces beyond film strength of any hydrocarbon lubricating oil, comprising viscous hydrocarbon naphthenic base oil compounded of aluminum soap of a saturated fatty acid and unsubstituted carboxylic acid compound of unsaturated fatty acids, naphthenic acids and their aluminum derivatives as a crystallization inhibitory compound for aluminum soaps. No. 2,380,893. John Zimmer and Arnold Morway to Standard Oil Development Co.

Producing proper time-temperature relationships for permanent waving of hair including chemical mixture which generates heat at hair waving temperatures, mixture comprising: oxidizing and reducing substances which when treated with aqueous medium generates heat by chemical reaction; solid material for regulating hydrogen ion concentration, etc. No. 22,660. Ralph Evans and Everett McDonough to Zotos Corporation.

Lubricating grease containing a lubricant base with a soap of a 12-hydroxystearic acid together with a blending agent therefor. No. 2,380,960. Harold Fraser to International Lubricant Corp.

Preservation and fireproofing of wood. No. 2,381,049. Richard Hammond to General Timber Service, Inc.

Applying 4-methylquinoline-2(1)-thione to loci for repelling insects therefrom. No. 2,381,082. Seaphes Shinkle to United States Rubber Co.

New chemical compound and method of making same. No. 2,381,115. Melvin DeGroote and Bernhard Keiser to Petrolite Corp. Ltd.

Lubricant comprising hydrocarbon oil containing substituted alkyl phenyl ester of phosphoric acid, said substituted ester being derived from unsaturated alkyl phenols present in oils extracted from Anacardium genus of Anacardiaceae family. No. 2,381,127. Lebbeus Kemp, Jr. to The Texas Co.

Killing insects which comprises vaporizing addition product of acetone and sulfur dioxide having formula (CH_3) 2CO SO_2 and exposing insects to vapors. No. 2,381,257. Frank Campbell and Willis Fernelius.

True water-phase fine emulsion free from granulation and having Brownian movements, comprising chemically pure vegetable oil, and antioxidant dissolved in oil; emulsifying agent composed of mixture of superfatted sulfonated castor oil and sulphate of a higher alcohol; boric acid, chemically pure glycerine, and distilled water. No. 2,381,262. Morton Crowe to Crowe Chemical Co.

Making a grease which comprises dissolving grease base comprising a calcium soap of a saturated fatty acid and polyhydric alcohol ester of a higher fatty acid in a lubricating oil, etc. No. 2,381,314. William Shields to Emery Industries, Inc.

Mineral oil composition susceptible to formation of haze therein, comprising viscous mineral oil fraction containing, to stabilize oil fraction against oxidation, phosphorus- and sulfur-containing reaction product obtained by reaction of phosphorus sulfide and material selected from dicyclic terpene and essential oil comprised of a dicyclic terpene, and having to suppress formation of haze, compound selected from alcohol and a long-chain acid. No. 2,381,377. Henry Angel, Everett Fuller and Henry Berger to Socony-Vacuum Oil Co. Inc.

Composition comprising mineral lubricating oil and Friedel-Crafts condensation product of alkylene oxide with aromatic compound, said condensation product having pour depressing properties. No. 2,381,457. Eugene Lieber and Marvin Thorner to Standard Oil Development Co.

Solvent composition comprising naphtha and oxidized dimer of isobutylene. No. 2,381,506. Clarence Loane to Standard Oil Co.

Production of oil soluble mixtures containing metal salts of both mahogany sulphonic acids and green sulphonic acids dissolved in lubricating oil. No. 2,381,708. Earl-Amott to Union Oil Co. of California.

Recovery of essential oils comprising hardening citrous peel with material of group consisting of $Ca(OH)_2$, CaO, $CaCO_3$, SrO, $Sr(OH)_2$,$SrCO_3$, etc., pressing hardened peel, and separating oil from press liquor. No. 2,381,732. James Finley to California Fruit Growers Exchange.

Insolubilizing protein and product comprising aqueous solution of stearato chromic chloride and glue, having paraffin wax emulsified therein. No. 2,381,752. Ralph Iler to E. I. du Pont de Nemours & Co.

Preparing light weight leather base material, comprising forming mixture of comminuted leather, fibrous material and rubber solvent, mixing rubber cement with wet solids, incorporating wax-like material, preforming mixture between cold preforming means, etc. No. 2,381,774. Lester Riefenstahl to The General Tire & Rubber Co.

Potentially tenderizing tough animal tissue which comprises soaking animal tissue in tartaric acid solution having a pH of 2.24. No. 2,381,813. Joseph Epst.

Producing metal soap of heavy metals and alkaline earth metals which comprises reacting water solution of compound of metal selected from heavy metals and alkaline earth metals with "floating soap" collected from black liquor in manufacture of cellulosic material by sulfate or

---

Pat. 2,174,597. **Furnace Wall and Part Thereof and Method.** Patented Oct. 3, 1939. Method of preserving furnace walls or other refractory surfaces subjected to high temperatures, by spraying the walls with molten metal. Spraying may be done on wall while in place or before construction. Handling does not injure coating. Purposes and tests recited in patents. (Owners) John N. Pyster and Carl W. Stuke. Address all correspondence to John N. Pyster, 4701 Lincoln Ave., Oakland 2, Calif. Groups 32—55—71; 35—69. Reg. No. 526.

Pat. 2,234,895. **Oscillator Tube Relay Control.** Patented Mar. 11, 1941. A control circuit involving an oscillator tube arranged to control relatively heavy mechanisms by minute fluctuations in the circuit characteristics. Adapted to actuate a switch according to the response of a thermostat, hygrometer, or other sensitive element. (Co-owner) James P. Cerveny, 1427 N. E. Skidmore St., Portland 11, Oreg. Group 36—61. Reg. No. 527.

Pat. 1,950,956. **Method of Coating Chloramine and Product Thereof.** Patented Mar. 13, 1934. Method of treating chemicals whereby they are protected against reaction, inter-action, decomposition, or other change until such action is desired. Prevents action of an unstable or highly reactive chemical until such action is desired. Patent gives one specific example using coated chloramine. (Owner) Warner F. Wilhelm, 9145 S. Leavitt St., Chicago, Ill. Group 28—31—89. Reg. No. 531.

Re. Pat. 22,002. **Mixing Machine.** Reissued Jan. 13, 1942. Original No. 2,095,907, dated Oct. 12, 1937. May be designed for home laboratory or industrial use, will thoroughly mix a wide range of materials in a short time with consequent saving of power. Two shafts are fitted with specially designed blades or paddles. One shaft revolves twice as fast as the other yet the blades just clear the bosses of the opposing blades. Blades sweep the bottom and sides of pan clear of all material so that with each complete revolution all ingredients are lifted and all mixing done between the blades and not between the blades and pan. Blades may have apertures and speed increased for certain mixtures, may also carry removable tips. (Owner) Fritz Beken, 27 Sunnyside Rd., Ilford, Essex, England. Groups 20—41—42—45—51—99; 32—42; 35—51; 39—11. Reg. No. 538.

Pat. 2,357,986. **Valve Mechanism.** Patented Sept. 12, 1944. Control mechanism for high pressure hydraulic actuating means for manipulating mechanism employed on slabbing and blooming rolling mills. A single main control valve, whose movement is controlled by a single conventional pilot valve, is entirely enclosed, has no externally projecting relatively movable parts and has all the simplicity of a single sealed, self-contained unit when assembled. The number of relatively movable parts is also reduced to a minimum. Necessity of providing external packing boxes or glands is eliminated thus minimizing likelihood of leakage. (Owner) Samuel P. Wichterman, 134 Thompson Ave., Donora, Pa. Groups 33—12; 35—42. Reg. No. 546.

Pat. 2,294,199. **Calculating Instrument.** Patented Aug. 25, 1942. Device employs principle of the slide rule. A substantially wide scale member is positioned in recessed body member preferably of metal so that range of calculations will be appreciably increased over conventional calculating devices. Cursor is provided with a transversely disposed index line which cooperates with scale member in calculations. A pivoted stop can be projected into or out of the line of scale member by pressing button. Clearance for fingers is provided when operating device. (Owner) George H. Morse, 927 28th St., South, Arlington, Va. Groups 33—52; 35—43—65—71; 39—11. Reg. No. 556.

Notice

International Harvester Company is offering licenses at reasonable royalty under more than 1,000 of its 1243 patents. That company is preparing abstracts of the available patents and will publish a pamphlet stating its patent policy and containing these abstracts.

Further information can be procured by addressing Patent Department, International Harvester Company, 180 North Michigan Avenue, Chicago 1, Illinois.

November 13, 1945

Pat. 2,013,372. **Relief Valve.** Patented Sept. 3, 1935. Reg. No. 567.

Pat. 2,053,931. **Pressure Control Valve.** Patented Sept. 8, 1936. Reg. No. 568.

Pat. 2,089,144. **Control Valve for Water Pressure Systems.** Patented Aug. 3, 1937. Reg. No. 569.

Pat. 2,150,460. **Pressure Control Mechanism.** Patented Mar. 14, 1939. Reg. No. 570.

Pat. 2,252,152. **Pressure Control Valve.** Patented Aug. 12, 1941. Reg. No. 571.

The five patents listed above cover valves primarily designed for use in closed hot water heating systems for maintaining the water pressure within the system between predetermined maximum and minimum limits. The valves are of the diaphragm type and designed so that they are held against the seat by the pressure within the system and are unseated by a stop member when pressure rises or falls below the maximum and minimum pressures respectively. (Owner) Patent Development Company Limited. Address all correspondence to Charles H. Riches & Sons, 45 Richmond St. West, Toronto, Ontario, Canada. Group 33—61—66.

soda process. No. 2,381,822. Paul Hodges to Gulf States Paper Corp.

* Textile

Production of a compact bonded yarn, which comprises associating strong yarns of stretched, saponified organic esters of cellulose with thermoplastic yarns having a basis of cellulose acetate and then subjecting composite yarn to action of vapors of a softening agent for thermoplastic material. No. 2,380,003. William Whitehead to Celanese Corp. of America.

Marking crayon for textiles undergoing processing containing pigment, a chlorinated rubber, a high boiling plasticizer solvent and a wax. No. 2,380,126. Fred Sturm.

Process for rendering textiles water-repellent. No. 2,380,133. Ernst Waltmann and Edgar Wolf to Heberlein Patent Corp.

Treatment of cellulosic materials which comprises reacting them with organic compound containing two radicles having formula C.NH.CN. No. 2,380,157. Henry Dreyfus to Celanese Corp. of America.

Manufacture of elastic fabrics, comprising arranging elastic filaments parallel, applying adhesive to filaments. No. 2,380,373. Sterling Alderfer, one-half to Edward Andrews.

Compound fabric comprising layer of fabric and a layer of a fibrous sheet material, said fibrous sheet material coated with a water-insoluble but water-absorbent inorganic gel and layers of fabric and fibrous sheet material being bonded together by resinous material selected from thermoplastic synthetic resins, chlorinated natural rubber, and chlorinated synthetic rubber. No. 2,380,775. Hans Meyer.

Reducing tendency of yarns, felted fabrics, etc., containing vinyl resin, to accumulate charges of static electricity, which comprises applying composition containing a wetting agent and, as anti-static component, a water-dispersible polyethylene imine and applying aliphatic aldehyde. No. 2,381,020. Benjamin Wilkes and Walter Denison to Carbide and Carbon Chemicals Corp.

Stable bath for rendering fibrous material fire-retardant and water-repellent, which includes water solution of alkali borate, a water-soluble aliphatic carboxylic acid, and emulsion of a water-repellent composition. No. 2,381,487. Alton Cook and Ernest Whitworth to Arkansas Co. Inc.

Window shade cloth comprising glass fiber webs bonded together by flexible adhesive coating composition, said composition being baked-on and consisting of film forming constituent selected from nitrocellulose, ethyl cellulose, cellulose acetate and cellulose acetate butyrate, pigment and plasticizer. No. 2,381,542. Charles Hyatt and Thomas Kerr to Columbus Coated Fabrics Corp.

Imparting permanent finish to textile which comprises applying to textile a water dispersible film forming binder and fixing agent comprising antimony compound to render binder water insoluble upon dehydration, together with fluoride selected from antimony trifluoride and sodium silico fluoride. No. 2,381,587. Ira Griffin, Dave Truax and Norman Nuttall to Stein, Hall & Co. Inc.

Treating textile fibers to render water-repellent and resistant to rot development, comprising treating fibers with a monoalkylene succinic acid salt, and thereafter treating fibers with soluble cupric salt. No. 2,381,852. Carroll Hochwalt to Monsanto Chemical Co.

* Water, Sewage, and Sanitation

Apparatus to treat sewage effluent. No. 2,380,465. Chester Proudman.

Removing fluorine from fluorine contaminated water which comprises, treating crushed bone with solution of alkali to remove fluorine therefrom, washing, neutralizing bone with acid, and contacting water to be treated with defluorinated bone. No. 2,380,800. Howard Smith and Margaret Smith.

Sewage treating apparatus comprising a tank separated into an aeration chamber and a clarifier chamber, means to supply sewage to aeration chamber, etc. No. 2,381,579. Augustus Durdin, III.

** Agriculture

Producing dispersive agent, which comprises comminuting to finely divided form saponin-containing vegetable matter preparatory to extraction, etc. No. 2,381,939. Arthur Tiede to Grover Bear.

Refining Irish moss gum wherein purified product is precipitated from gum solution by treatment with alcohol. No. 2,382,286. Norman Blihovde to Jacques Wolf & Co.

Stable plant growth stimulant composition in dry powdered form capable of inducing rooting and of stimulating healthy vigorous plant growth comprising pure allantoin acting as cell proliferant, plant nutrient materials, plant micrometabolic elements, and a dry pulverized inert vehicle. No. 2,382,326. Sebastian Mecca to Schuylkill Chemical Co.

Extracting plant material of Larrea divaricata with aqueous solution of alkali hydroxide containing reducing agent, acidulating until a flocculent precipitate occurs, and separating nofluocculent, nordihydroguaiaretic acid. No. 2,382,475. Ole Gisvold to Regents of the University of Minnesota.

Producing molded articles which comprises boiling vegetable material of species Eichhornia crassipes in aqueous medium until converted into a water-containing, soft pulp. No. 2,382,568. Ali Karim.

Extracting oil from avocados comprising forming pulpy mixture of avocados with lime, to disintegrate cell walls of avocados and cause oil-water emulsion to break, and then separating oil from mixture. No. 2,383,398. Howard Love; dedicated to the free use of the people of the United States.

Preparing aqueous wax emulsion for wax-coating fresh vegetable produce, which comprises preparing hot fluid mixture of waxy material including ouricury wax and a fatty acid commingling therewith water solution of alkaline agent. No. 2,383,451. Charles Cothran to Brogdex Co.

Producing scent fixative which comprises treating leafy portion of Myrica asplenifolia with petroleum ether, separating solids from solution, and removing petroleum ether to obtain waxy substance extracted from Myrica asplenifolia. No. 2,383,517. Maurice Sandoz to Burton T. Bush, Inc.

Obtaining product containing unsaponifiable constituents which comprises extracting plant tissue of low lipoid content with water-miscible lower molecular weight organic solvent of class of ketones and alcohols, reacting extract with barium hydroxide, effecting precipitation of saponifiable constituents. No. 2,383,561. Harold Petering and Paul Morgal to The Michigan State Board of Agriculture.

Bleaching and improving properties of candelilla wax which comprises chemically purifying wax by action of a hydrogen-chlorine-oxygen acid. No. 2,383,629. Cyril Treacy to Mamaroneck Chemical Corp.

** Biochemical

Antioxidant composition comprising ascorbyl monoester of saturated aliphatic monocarboxylic acid, compound selected from alpha-tocopherol and isomers and analogues of alpha-tocopherol, and phospholipids. No. 2,383,815. Roy Riemenschneider and Jack Turer to the Secretary of Agriculture of the United States of America.

Antioxidant composition comprising ascorbyl monoester of a saturated aliphatic monocarboxylic acid, alkali soap and compound from alkali carbonates and alkali bicarbonates. No. 2,383,816. Roy Riemenschneider and Jack Turer to Secretary of Agriculture of the United States of America.

** Ceramics

Glass composition whose chemical analysis may be expressed as P_2O_5, Al_2O_3, ZnO. No. 2,381,925. Alexis Pincus to American Optical Co.

Producing refractory casting free from large voids which comprises casting molten refractory and filling pipe formed by crystallization thereof with additional molten refractory mixed with sulphate capable of dissociating sulphur trioxide. No. 2,381,945. Theodore Field and Harold Smyth to Corhart Refractories Co.

Ultraviolet transmitting glass which comprises silica, boric oxide, alumina and alkali metal oxide. No. 2,382,056. Harrison Hood to Corning Glass Works.

Forming ceramic from mixture of talc, clay, a flux, a binder, and a plasticizer dissolved in solvent therefor, etc. No. 2,382,136. Henry Crowley and Arthur Hossenlopp to Henry L. Crowley & Co. Inc.

Insulating bodies comprising ball clay, whiting ($CaCO_3$-calcium carbonate), barium carbonate ($BaCO_3$), zinc oxide (ZnO), boric acid (H_3BO_3), talc. No. 2,382,137. Henry Crowley and Arthur Hossenlopp to Henry L. Crowley & Co. Inc.

Producing synthetic stone or artificial structural material, which consists in mixing alumino-silicic material, anhydrous alumino-silicate material, alkaline-earth base to produce reaction, and water to produce thorough wetting. No. 2,382,154. Paul Jones and John Swezey to Rostone Corp.

Producing artificial structural material or synthetic stone, which consists in mixing anhydrous alumino-silicate material, alumino-silicic acid material, alkaline-earth base to produce reaction, and water. No. 2,382,155. Paul Jones and John Swezey to Rostone Corp.

Apparatus for treating glass, comprising plate for supporting molten glass, means for applying supersonic vibrations to bottom point of plate, and means for pouring stream of molten glass at point directly above said bottom point. No. 2,382,187. Alfred Vang, one-half to Stevenson, Jordan & Harrison, Inc.

Selenium ruby glass containing SiO_2, Na_2O+K_2O, $CaO+MgO$, Al_2O_3, ZnO, selenium, cadmium and sulfur. No. 2,382,282. Chester Austin and John Sullivan to Battelle Memorial Institute.

Manufacture of mineral wool. No. 2,382,290. Marshall Callander.

Dry plaster mix which after being plasticized with water and agitated will set into a hard, porous, sound-absorbing mass said mix comprising a binder from partially calcined gypsum, plaster of Paris and gypsum stucco, filler material, soap bark and a surface action de-foaming substance consisting of sodium lauryl sulfate. No. 2,382,561. Thurlow Gregory.

Treating optical glass surface that comprises bathing it in hydrofluoric acid to attack surface irregularities and removing waste products thus formed with perchloric acid. No. 2,382,660. Harvey Penberthy to Eastman Kodak Co.

Treatment of lime-containing raw materials which comprises calcining dolomite with burning agent, providing in slurry of calcined material containing calcium chloride, conditions selectively favoring crystal growth of calcium hydroxide to mechanically separable size. No. 2,382,886. Harley Lee and Elizabeth Lee and Robert Schoenlaub to Basic Refractories, Inc.

Applying ceramic color to transfer sheet prepared with adhesive coating, which comprises depositing ceramic color on coated surface of sheet, moving surface into contact with applicator surface, and then embedding color in coating by vibrating applicator surface with reference to sheet. No. 2,383,190. Eugene Hardesty to Fuller Label & Box Co.

Application of ceramic color. No. 2,383,191. Eugene Hardesty to Fuller Label & Box Co.

Producing non-hygroscopic and non-aging organic retarder for gypsum plasters which comprises hydrolyzing protein with water with alkali metal hydroxide in presence of calcium hydroxide to produce calcium compound of hydrolyzation product. No. 2,383,252. Harry Huntzicker to United States Gypsum Co.

Apparatus for producing pressure-calcined gypsum. No. 2,383,254. Henrich Jessen to United States Gypsum Co.

Making settable refractory mold composition which consists in dissolving phosphorus pentoxide in ethyl alcohol, mixing with comminuted inert refractory oxide and magnesia. No. 2,383,812. Louis Navias to General Electric Co.

Grinding cement clinker, which comprises grinding clinker in presence of 2 amino 2 methyl 1,3 propanediol. No. 2,383,891. Edward Scripture, Jr.

** Coatings

Coating composition which dries to a dead flat flexible film, which comprises dispersion of pigment in a vehicle whose major binder constituent comprises drying oil, composition having dispersed therein aqueous fluid whose pH is adjusted to slightly below pseudo-iso-electric point of pigment. No. 2,381,915. Clifford Lent to Interchemical Corp.

Apparatus for smoothing thermoplastic coating material which has been applied upon one surface of a traveling web. No. 2,381,942. Arthur Wickwire, Jr. to Interchemical Corp.

Making coated steel wire cable to form firm bond with rubber composition which comprises passing wires through acid surface roughening bath, passing dried wires through solution of synthetic resin adapted to adhere to rubber, cabling wires, etc. No. 2,382,081. Enrique Luaces and Melvin Crosby to The Dayton Rubber Mfg. Co.

Coating plurality of closed coating chambers having means for coating under reduced pressure with vaporized metal, chambers being in com-

* *Continued from Vol. 576, Nos. 2, 3, 4, 5; Vol. 577, No. 1.*

** *Continued from Vol. 577, Nos. 2, 3, 4.*

munication with one another and with exhausting means for maintaining reduced pressure. No. 2,382,432. Charles McManus and John Elder to Crown Cork & Seal Co. Inc.

Manufacture of chlorinated rubber coating compositions dissolved in aromatic hydrocarbon solvents, which includes preparing a fatty oil for compounding with chlorinated rubber by dispersing in fatty oil a salt. No. 2,382,529. Laszlo Auer.

Coating composition comprising dispersion of oil-in-water type, dispersion medium comprising water and dispersed phase comprising film forming vehicle solids incorporating a fatty oil, and dispersion containing methyl cellulose and another surface-active agent. No. 2,382,533. Laszlo Auer.

Protective coating comprising mixture containing rubber latex, aggregate of particles of English walnut shells, and aluminous cement. No. 2,382,742. Harold Patch to Crossfield Products Corp.

Coating basis metal in continuous lengths with coating metal through contact of basis metal with coating metal in a molten state after basis metal has been wetted with aqueous volatile acidic solution. No. 2,382,868. Colin Fink to Metal Alloys, Inc.

Coating mineral aggregate which comprises treating aggregate with lime and coating with bituminous cutback in presence of a phosphatide. No. 2,383,097. Bruce Wettman to The Texas Co.

Phenolic base impregnating varnish having greenness of from 1% to 5% when combined with sheet cellulose filler, the varnish capable of bonding to urea resins and polymerizing at temperatures of 140°C. and lower into odorless and infusible condensate, comprising reaction product of a phenol and formaldehyde solution, etc. No. 2,383,430. William Weltman to Westinghouse Electric Corp.

Coating support material within a vacuum chamber, comprising subjecting support material to cleaning to remove foreign matter, applying removable liquid protective covering which is non-reactive with said surface to partially clean support surface, etc. No. 2,383,469. William Colbert and Arthur Weinrich to Libbey-Owens-Ford Glass Co.

Flexible, highly heat and oil resistant coating of ethyl cellulose (ethoxyl content 43.5—44.5%), ethyl alcohol (denatured), benzol, 60% solution in toluene of 82% castor oil modified glycerol sebacate, butyl stearate, heavy mineral oil, nigrosine oleate, 60% solution in butyl alcohol of butyl alcohol modified urea-formaldehyde resin. No. 2,383,548. Charles Hemming to E. I. du Pont de Nemours & Co.

Coating composition comprising hard, oil-soluble resinous ester of alcohol selected from pentaerythritol and polypentaerythritols with mixture of acids consisting of rosin acid and aliphatic unsaturated monobasic acid. No. 2,383,624. George Spiller to Hercules Powder Co.

*Dyestuffs

Anthraquinone dyestuffs containing in nucleus a hydroxy-alkyl amino group esterified with a lower alkyl mono-carboxylic acid, and another nuclear amino group. No. 2,381,971. Henry Dreyfus to Celanese Corp. of America.

Dyeing of cellulosic textile materials with sulphur dyes and vat dyes which after application to textile are subjected to oxidation treatment to develop color and fastness, which comprises effecting oxidation by treating textile impregnated with dyestuff with aqueous solution of sodium chlorite. No. 2,382,188. George Vincent and Archie Dubeau to The Mathieson Alkali Works, Inc.

Hectograph printing ink having spirit soluble dye concentration and containing solvent for dye and for the retarding agent. No. 2,382,796. Nelson Knaggs to Moore Business Forms, Inc.

Ink material to be printed upon transparent base, comprising organic solvent for base and methyl violet dye base. No. 2,382,861. Joseph Curado to General Printing Ink Corp.

New coloring matter 1.2:2':4:4'—tetraaryl—5:5'—aza-dipyrromethines, in which aryl radicals possess no more than 10 cyclic carbon atoms. No. 2,382,914. Maurice Rogers to Imperial Chemical Industries Ltd.

Anthraquinone derivatives. No. 2,383,236. Gerard Buckley and Henry Piggott to Imperial Chemical Industries Ltd.

Dyestuff intermediates. No. 2,383,255. John Kendall to Ilford Ltd.

New azo dyestuffs of general formula A—N=N—B in which A is residue of coupling component and B is residue of a diazotized N-para-aminophenyl-5-amino coumaran. No. 2,383,264. Hans Lecher and Robert Parker and Robert Long to American Cyanamid Co.

Color composition comprising vat dye and a quinone-sulphonamide derivative. No. 2,383,393. Roy Kienle and Chester Amick to American Cyanamid Co.

Starting material for preparation of green dyestuff, a dry mixture of Schaffer's salt, inorganic alkali nitrite and iron salt having acid reaction in aqueous solution. No. 2,383,762. Rudolf Bloch and Isaac Schnerb to Palestine Potash Ltd.

*Equipment

Fluid level indicating device for wells. No. 2,381,875. Charles Bryant to The Dow Chemical Co.

Apparatus for sizing materials in an elastic fluid medium. No. 2,381,954. Harlowe Hardinge.

Apparatus for continuous solvent extraction of solid material comprising extraction chamber, means for flowing material to be extracted through chamber, etc. No. 2,381,965. Norton Berry to General Foods Corp.

Apparatus for electrostatic separation of material particles. No. 2,382,122. Edwin Wiegand to Orefraction Inc.

Atomizer for liquids comprising body means providing chamber having inlet for gaseous fluid, inlet for liquid, and a common outlet for gaseous fluid and liquid. No. 2,382,124. Agnew Bahnson, Jr.

Apparatus for sorting granular material according to its moisture content. No. 2,382,168. Thomas Oxley and Frank Henderson.

Steam generating plant comprising water tube boiler for generation of low pressure steam, a monotube boiler for generation of high pressure superheated steam, etc. No. 2,382,176. George Sanders.

Electrical dust-precipitator for cleaning a gas-stream. No. 2,382,254. Gaylord Penney and Russell Nielsen to Westinghouse Electric Corp.

Heat exchange apparatus. No. 2,382,255. Robert Pyzel to Universal Oil Products Co.

Combustion apparatus for chemical analysis comprising combustion furnace and combustion tube long as compared to its diameter and of integral construction from end to end and of refractory material and extending through furnace, etc. No. 2,382,301. George Miller Dreher.

Liquid level indicator for quick attachment to, and lengthwise adjustment along, elongated gauging element employed in measuring of liquid in container. No. 2,382,377. Robert Blake to Shand & Jurs Co.

Color analyzing apparatus comprising photocell means, two differently colored filters, a light source, etc. No. 2,382,439. Robert Osborn to Hercules Powder Co.

Electrical follow-up device responsive to changes in a liquid level. No. 2,382,516. Philip Sprague to The Hays Corp.

Pressure gauge for measuring extreme value of a fluctuating pressure. No. 2,382,547. Kalman De Juhasz.

Relief valve structure for storage tanks for volatile liquids. No. 2,382,555. Peter Elliott to Oil Distribution Appliances Ltd.

Centrifuging material to separate liquid from solids. No. 2,382,574. George Norman and Joseph Stuart, II, to Hercules Powder Co.

Apparatus for effecting clarification of turbulent liquid by flocculation. No. 2,382,605. Ralph Carter, Jr. to Ralph B. Carter Co.

Unit for controlling specific gravity of solution comprising tank for solution, a motor controlled dispensing device for feeding soap particles into the tank and solution, etc. No. 2,382,648. Thomas Martin.

Tank contents gauge with correction for temperature. No. 2,382,695. Clarence de Giers to The Liquidometer Corp.

Electrolytic depolarization cell. No. 2,382,735. Henry Marks to Wallace & Tiernan Products, Inc.

Removal of dust from flue of a metallurgical furnace, telescopic dust discharge conduit having inner and outersleeve, etc. No. 2,382,855. Luther Buck and Charles Veatch to American Smelting and Refining Co.

Viscometer in which a rotating sample develops recordable torque upon vane immersed therein, etc. No. 2,382,979. Kenneth Demb to Sylvania Electric Products Inc.

Electrical precipitator including opposed precipitating and collecting electrode structures spaced apart to provide a gas passage therebetween, etc. No. 2,383,030. Harry White, one-half to Research Corporation, and one-half to Western Precipitation Corporation.

Fluid filter. No. 2,383,065. Samuel Lehman to Bendix Aviation Corp.

Filter for removal of suspended particles from gases, said filter comprising foraminous supporting member, continuous mat of fine mineral wool fibers with interspersed binder, and continuous mat of coarse mineral wool fibers overlying first mat. No. 2,383,066. Paul McDermott to Johns-Manville Corp.

Flickering beam spectrophotometer utilizing integrating sphere and source of illumination operated by alternating current which produces in integrating sphere a spurious light pulsation of frequency higher than flicker frequency resulting from operation of flickering mechanism of spectrophotometer. No. 2,383,075. Orrin Pineo to American Cyanamid Co.

Controlled material feeding apparatus. No. 2,383,085. William Schmitz, Jr. to E. I. du Pont de Nemours & Co.

Electrical gas cleaner. No. 2,383,111. Verner Dahlman to American Air Filter Co. Inc.

Electrical gas cleaner having a frame and means on frame prescribing a a path of movement extending through a plate-wiping area, etc. No. 2,383,112. Verner Dahlman to American Air Filter Co. Inc.

Liquid level indicator. No. 2,383,187. Frank Grapes to Universal Oil Products Co.

Condensing unit for a tube retort, a sleeve fitting within tube open at inner end and closed at outer end, and conduit providing supplementary passage opening adiacent inner end of sleeve and traversing closed end of sleeve. No. 2,383,209. Daniel Newkirk and Elbert Ensign to Ford Motor Co.

Solar distilling apparatus. No. 2,383,234. William Speight Barnes.

In apparatus for treating filamentary material, a plurality of centrifugal buckets, axially movable means in buckets comprising a platform for supporting filamentary material, etc. No. 2,383,240. Henry Crewdson to American Viscose Corp.

Heat exchanger for liquids. No. 2,383,292. Charles Dalzell and Ellsworth Wyman to Cherry-Burrell Corp.

In filtering apparatus, a liquid container having plurality of successively arranged liquid-receiving walled compartments, etc. No. 2,383,302. Lyman Feinauer and Roland Payne to Remington Arms Co. Inc.

Contact for copper oxide rectifiers. No. 2,383,311. Carl Hein to Westinghouse Electric Corp.

Device for treating gases to remove oxygenous impurities therefrom comprising a cylindrical shell forming enclosed chamber, a plurality of ferrous metal plates, etc. No. 2,383,344. Howard Scott and Philip Kalischer to Westinghouse Electric Corp.

Spectrophotometer attachment for eliminating specular reflection. No. 2,383,346. William Shurcliff to American Cyanamid Co.

Refractometer. No. 2,383,347. Martin Silge.

Column head for batch fractionating columns. No. 2,383,377. Norman Evans and Patrick Docksey to Anglo-Iranian Oil Co. Ltd.

Electric induction furnace of horizontal open ring type, a high resistance electrically conducting block choking ring channel and forming a portion of secondary. No. 2,383,384. James Coffee Harris, Jr.

Chemical feeding pump. No. 2,383,422. John Singleton.

Glass electrode, comprising glass tube for passage of a test liquid therethrough, etc. No. 2,383,450. Edwin Coleman.

Apparatus for cleaning glass and for temporarily protecting cleaned surfaces thereof against further contamination, comprising subjecting surfaces of glass to contact with hot flame to remove contaminants therefrom, and applying by condensation of vapors a removable protective liquid surface coating to glass. No. 2,383,470. Willard Morgan to Libbey-Owens-Ford Glass Co.

Apparatus for filling and confining liquid in a container with a suitable gas under pressure. No. 2,383,522. Charles Thoms.

Upright cylindrical expansion-roof storage container for liquids and gases in which cylindrical depending skirt of bell-type roof seals in annular launder on periphery of container, etc. No. 2,383,555. Wilbur Laird.

Hydrocarbon resistant, light pressure sealing gasket structure. No. 2,383,570. David Sellew.

Apparatus for temperature control of catalytic reactions. No. 2,383,636. Walter Wurth to Standard Oil Development Co.

Continuously drying wet-solids material of semiplastic nature which is sufficiently stiff to retain channels after they have been formed in said material. No. 2,383,694. John Steiner to Hercules Powder Co.

Catalyst chamber apparatus wherein closed chamber having fluid outlet contains at least one bed of solid catalyst material. No. 2,383,729. John Loy to Phillips Petroleum Co.

Flow-measuring apparatus, combination of a fluid-tight casing, a pressure sensitive diaphragm mounted in casing and dividing casing into two fluid-tight compartments, etc. No. 2,383,757. Herbert Ziebolz to Electronbeam, Ltd.

Device for detecting and counting ionizing radiations of radio-active

* *Continued from Vol. 577, Nos. 2, 3, 4.*

material No. 2,383,820. Solomon Rosenblum to Canadian Radium & Uranium Corp.

Filter press constructed of pularity of filter plates faced with filtering members and spacer members disposed between facings of filter plates for providing a closure around margins of plates and enclosure for unfiltered liquids in inter-marginal area, etc. No. 2,383,868. Philip Kraus to E. I. du Pont de Nemours & Co.

* *Explosives*

Conditioning and preserving fibrous nitrated cellulose safely without deterioration which comprises wetting material with water containing in solution lower aliphatic alcohol. No. 2,382,130. Robert Cairns and Raphael Stern to Hercules Powder Co.

Manufacture of trinitrotoluene and preparation of a crystallized acid-free product. No. 2,382,133. Francis Chambers, Jr. and Clifford Akeley to E. I. du Pont de Nemours & Co.

* *Food*

Pasteurizing a liquid, comprising flowing liquid over surface in film that is unconfined on one side while conducting electric current through liquid to increase temperature of liquid. No. 2,382,033. George Supplee, Otto Jensen, and George Flanigan to The Borden Co.

Stabilizing iodine content of animal and poultry feed which comprises intermixing protein containing substance having affinity for iodine. No. 2,382,193. Clarence Whitmoyer and William Moore to Whitmoyer Laboratories, Inc.

Stabilizing glyceride oil containing food composition against oxidative deterioration which comprises incorporating agent selected from hops and a water and alcohol soluble extract of hops. No. 2,382,242. Carl Lindow and Joseph Thompson to Kellogg Co.

Production of baked goods leavened without yeast, which comprises admixing flour, water and other ingredients to form a dough, amount of water being sufficient to give absorption of 54 to 66% in presence of an inert gas having solubility in water of at least four to one, said inert gas is dimethyl ether or methyl chloride. No. 2,382,305. Jacob Freilich and Charles Frey to Standard Brands, Inc.

Forming substitute food product for pimiento material. No. 2,382,682. Edward Van Dellen and Richard Ball.

Preparing dry milk product comprising condensing fluid milk product, superheating condensed milk product to produce slightly toughened curd, and drying condensed superheated milk product. No. 2,383,070. Donald Mook to The Borden Co.

Fractionally distilling distillers beer to produce a spirituous liquor characterized by light body and freedom from impurities imparting objectionable taste and/or odor characteristics. No. 2,383,176. Herman Willkie to Joseph E. Seagram & Sons, Inc.

Treating foods to destroy sporogenic bacteria comprising momentarily contacting surface of same with acid solution. No. 2,383,907. Henry Beechem and Frederick Fabian to P. W. Bonewitz Co.

Production of starch conversion sirup by acid hydrolysis of starch in aqueous suspension at superatmospheric steam pressure, improvement which consists in contacting suspension with effective amount of activated carbon of vegetable origin. No. 2,383,914. Richard Monte to Corn Products Refining Co.

* *Inorganic*

Separating chlorine and sulphur dioxide, comprising distilling fractionally at one pressure a mixture comprising chlorine and sulphur dioxide, whereby a residue rich in one of these components is obtained and azeotropic mixture containing both components is formed as a distillate, etc. No. 2,381,876. Harrison Carlson to E. I. du Pont de Nemours & Co.

Oxidizing sulphur dioxide to sulphur trioxide, comprising bringing gaseous mixture comprising sulphur dioxide and oxygen into contact with fluid catalyst comprising molten alkali metal sulphate and oxygen compound of vanadium. No. 2,381,908. David Hurt and Charles Rohrmann to E. I. du Pont de Nemours & Co.

Preparing anhydrous magnesium chloride which comprises heating hydrous form of magnesium chloride with liquid monohydroxy saturated aliphatic alcohol. No. 2,381,994. Arnold Belchetz to The M. W. Kellogg Co.

Separating anhydrous magnesium chloride from solution of anyhdrous magnesium chloride in anhydrous monohydroxy saturated aliphatic alcohol which comprises adding anhydrous ammonia, etc. No. 2,381,995. Arnold Belchetz to The M. W. Kellogg Co.

Preparing double chromate salts which comprises admixing compound from oxides, hydroxides, and carbonates of lead, barium, calcium, titanium, zinc, iron, etc., with alkali metal dichromate, and heating to form sintered heavy metal-alkali metal chromate. No. 2,382,157. Leonard Kebrich to National Lead Co.

Preparing pure nitric oxide. No. 2,382,189. Milton Wahl to E. I. du Pont de Nemours & Co.

Ammonium nitrate melt containing water is pebbled by dispersion into cooling gas to form solidified pebbles during free fall of dispersed material through the gas and pebbled material is dried. No. 2,382,298. Richard Datin to The Solvay Process Co.

Reclaiming quartz crystal having coating containing tin, silver, bismuth and lead metaborate. No. 2,382,317. Wilbur Hoff to Western Electric Co. Inc.

Treating sub-divided, solid synthetic fluoaluminate characterized by loss of fluorine upon heating, which comprises mixing alkaline material with synthetic fluoaluminate, etc. No. 2,382,327. Charles Miles to The Pennsylvania Salt Mfg. Co.

Separating potassium chloride from pulp containing potassium and sodium chlorides which comprises subjecting pulp to froth flotation in presence of water-soluble salt of a straight chain alkyl ester of glycine. No. 2,382,360. Nathan Weiner to Bonneville, Ltd.

Production of molten metallic magnesium wherein magnesium chloride containing as impurity an inorganic boron-containing substance is electrolysed in a fused salt bath above melting point of magnesium, method of minimizing dispersing action of boron substance on electrodeposited molten magnesium. No. 2,382,450. Cyril Slansky to The Dow Chemical Co.

Preparing silica-chromium oxide catalyst for dehydrogenation of hydrocarbons which comprises hydrolyzing ethyl ortho-silicate with water solution of chromium trioxide so as to produce on drying silica impregnated with chromium trioxide and converting chromium trioxide into chromium sesquioxide. No. 2,382,581. Robert Ruthruff to Process Management Co. Inc.

Catalytic material for promoting hydrocarbon isomerization comprising non-gaseous catalytic metal halide in combination with base material of granules consisting of finely divided carbon black mixed with bentonite binder. No. 2,382,586. Ernest Solomon, Herbert Passino and Louis Rubin to The M. W. Kellogg Co.

Continuously determining concentration of available chlorine in aqueous liquid, which comprises passing liquid continuously through a potential measuring system at a predetermined rate, adding to liquid prior to introduction into system predetermined amount of a reducing agent. No. 2,382,734. Henry Marks to Wallace & Tiernan Products, Inc.

Dithiophosphoric acids and salts thereof. No. 2,382,775. Elmer Cook and William Thomas, Jr. to American Cyanamid Co.

Production of anhydrous hydrogen halides from moist halogen acids. No. 2,382,788. Everett Gorin to Socony-Vacuum Oil Co. Inc.

Production of mixture of sulphur nitride free from ammonium chloride, which comprises dissolving sulphur monochloride in carbon tetrachloride which prior to use has been saturated with sulphur nitride, sulphur and imino-sulphur. No. 2,382,845. Michael Arnold and William Perry to Imperial Chemical Industries Ltd.

Making strontium oxide which comprises confining charge consisting of free carbon and strontium carbonate in closed chamber and subjecting same to heat of electric arc, maintaining over charge, an envelope of nascent carbon monoxide. No. 2,382,909. James Pierce, Jr.; The First National Bank of Tampa, executor of said James Pierce, Jr., deceased.

Aluminous abrasive material comprising crystalline aluminum oxide, and matrix consisting of silicate of beryl and zircon, each crystal of material having micro-structure characterized by parallel planes of matrix material bounding parallel columns. No. 2,383,035. Henry Baumann, Jr. and Charles Wooddell to The Carborundum Co.

Making arsenic chloride which comprises supplying flowable slurry of arsenic trioxide and sulfuric acid to reaction zone, flowing into zone hydrogen chloride gas, and passing volatilized arsenic trichloride into contact with sulfuric acid free of arsenic oxide. No. 2,383,105. Charles Booth to Monsanto Chemical Co.

Recovery of ammonia from ammonia-containing gas produced during coking of coal as large crystals of ammonium salt of mineral acid. No. 2,383,171. William Tiddy to Semet-Solvay Engineering Corp.

Production of sulphur-free sodium carbonate from sodium-sulphur salt of sodium sulphate, sodium acid sulphate and sodium sulphide; comprising heating mixture of starting sodium salt and reacting agent of hydroxide, oxide, and carbonate of metals calcium, barium, and lead, flowing molten mixture into water, and reacting it during flow with water and carbon dioxide. No. 2,383,247. Daniel Gardner.

Treating calcium stannate contaminated with pentavalent antimony, which comprises removing calcium by sulfurous acid leach, dewatering, and removing antimony by reducing roast wherein pentavalent antimony is converted to gaseous antimony trioxide. No. 2,383,427. Robert Thompson and Elliott Roberts to The Dorr Co.

Modifying a silicic acid sol by admixing therewith water-soluble organic hydrogen bonding donor compound selected from amides and ethers. No. 2,383,653. Joseph Kirk to E. I. du Pont de Nemours & Co.

Cyclic process for production of precipitated sodium bicarbonate of high purity and with high overall yield thereof and avoidance of separate steps for evaporation of water or filtration of caustic soda solution. No. 2,383,674. Sidney Osborne to Hooker Electrochemical Co.

* *Medicinal*

6-Amino nicotinamide derivatives. No. 2,381,873. William Braker and Edward Pribyl to E. R. Squibb & Sons.

Synthesis of vitamin A. No. 2,382,085. Nicholas Milas to Research Corp.

Synthesis of ethers of vitamin A. No. 2,382,086. Nicholas Milas to Research Corp.

Manufacture of 2-(parahydroxylaminobenzenesulphonamido)-4-methylthiazole, comprising causing hydrogen to act on 2-(para-nitrobenzenesulphonamido)-4-methylthiazole in presence of catalyst selected from platinum and nickel groups. No. 2,382,167. Max Hartmann and Jean Druey to Ciba Pharmaceutical Products, Inc.

Anesthetic solution comprising salt of an alkamine ester of amino benzoic acid and substance selected from alkyl esters of amino benzoic acid and their salts dissolved in liquid selected from water, water-miscible polyhydroxy aliphatic alcohols and their water-miscible ether derivatives. No. 2,382,546. David Curtis.

Ethers of vitamin B6. No. 2,382,876. Stanton Harris to Merck & Co. Inc.

Reacting pure beta amylose with iodine in solvent selected from water and glycerine, which product has therapeutic properties. No. 2,383,334. Wallace Minto, twenty-one and sixty-six hundredths per cent to H. R. Van Deventer, twenty-one and sixty-six hundredths per cent to D. R. Keller, and twenty-one and sixty-six hundredths per cent to E. F. Waller.

Provitamin D extracted from mussels of species Modiolus demissus Dillwyn. No. 2,383,446. William Calcott and James Waddell and Hans Rosenberg to E. I. du Pont de Nemours & Co.

Antimalarial comprising 3-chloro-7-methoxy-9-(deltadiethylamino-alpha-methylbutylamino)-acridine disulfamate. No. 2,383,458. Morris Auerbach to Winthrop Chemical Co. Inc.

Preparing steroidal hormones. No. 2,383,472. Harry Crooks, Jr. and Eldon Jones to Parke, Davis & Co.

Extracting vitamin C which consists in adding compound of magnesium of oxide and hydroxide to fruit juice containing vitamin C, converting vitamin C into a compound insoluble in water and alcohol, etc. No. 2,383,902. Ryo Yamamoto and Takeshi Hara.

* *Metals, Ores*

Producing highly conductive metallic film of continuous crystalline structure on electrically non-conductive surface. No. 2,381,911. Bertram Kathe.

Smelting copper-lead dross containing iron in presence of sodium sulphide matte forming compound, litharge and a carbonaceous reducing agent, to produce layer of lead bullion, a layer of copper speiss, and a layer of sodium sulphide matte. No. 2,381,970. Arthur Collins to American Smelting and Refining Co.

Electroplating apparatus for plating metal upon a cathode. No. 2,382,018. Edwin Martin to Inland Steel Co.

Producing reguline metallic magnesium comprising mixing magnesium-

* *Continued from Vol. 577, Nos. 2, 3, 4.*

bearing compound, carbon and a foreign finely divided crystalline component, etc. No. 2,382,047. Henry Ford, Elbert Ensign, and Archibald Quinn to Ford Motor Co.

Separating components of ores of non-sulfide non-silicate minerals admixed with silicious gangue and silicate minerals admixed with quartz and soluble potash minerals occurring in their soluble ores, which comprises admixing aqueous pulp of ore with collector selected from phosphonamides and their salts. No. 2,382,178. Karl Schilling, Allen Cole, and James Duke and Wesley Houston to Minerals Separation North American Corp.

Alloy containing carbon, chromium, tungsten, manganese, silicon, nickel, copper, with iron. No. 2,382,273. Rudolf Thielemann to General Electric Co.

Ferrous metal pickling bath and method of preparing same. No. 2,382,336. Jan Ruys and Aaron Wachter to Shell Development Co.

Making silver-cadmium oxide electric contact element which comprises pressing mixture of silver powder and powdered cadmium oxide, heating compact in oxidizing atmosphere while exposing single face to reducing conditions. No. 2,382,238. Erle Shobert to Stackpole Carbon Co.

Method of and apparatus for direct reduction of iron ores. No. 2,382,395. Arthur Cape and Charles Foerster and Howard Griswold to Coast Reduction, Inc.

Recovery of light metal from fused salt bath more dense than the metal recovered. No. 2,382,434. Robert McNitt.

Fine-grained steel quench-hardened article, other than a nitride case-hardened article, having composition: silicon; manganese; carbon; beryllium; deoxidizing grain-refining element; iron. No. 2,382,466. Walter Crafts to Electro Metallurgical Co.

Fine-grained steel hardened article. No. 2,382,467. Walter Crafts to Electro Metallurgical Co.

Apparatus for hardening and tempering ferrous metal work-piece hardenable by heating and quenching. No. 2,382,515. Stephen Smith to Air Reduction Co. Inc.

Melting ferrous base, low carbon, high melting point long turnings and heavier scrap. No. 2,382,534. Thaddeus Baily.

Rejuvenation process for electrolytic smoothing bath consisting initially of hydrochloric acid and glycerine, which bath has been degenerated by use, which process consists in adding acetone to bath. No. 2,382,549. Roger Edmonson to The National Cash Register Co.

Recovering suspended materials from gases from flash roasting of zinc sulphide ores which comprises supplying sodium chloride to roasting operation and subjecting gases to electrical precipitation. No. 2,382,565. Carl Hedberg and Harry Richardson to Research Corp.

Making sintered powdered iron articles. No. 2,382,601. Alfred Boegehold and Robert Terry to General Motors Corp.

Composition for permanent magnet use comprising iron, manganese, and balance except impurities consisting of cobalt. No. 2,382,649. Ethan Nesbitt to Bell Telephone Laboratories, Inc.

Magnetic composition or alloy composed of iron, nickel, and manganese. No. 2,382,650. Ethan Nesbitt to Bell Telephone Laboratories, Inc.

Permanent magnet consisting of manganese, and chromium. No. 2,382,651. Ethan Nesbitt to Bell Telephone Laboratories, Inc.

Magnetic composition comprising iron, nickel, manganese, and cobalt. No. 2,382,652. Ethan Nesbitt to Bell Telephone Laboratories, Inc.

Magnetic composition comprising iron, nickel, and vanadium which has been forcibly elongated while cold and thereafter heated above 500°C. No. 2,382,653. Ethan Nesbitt to Bell Telephone Laboratories, Inc.

Permanent magnet consisting of alloy of iron, nickel, and chromium. No. 2,382,654. Ethan Nesbitt to Bell Telephone Laboratories, Inc.

Alloy tool and die steel containing chromium, cobalt, beryllium and copper. No. 2,382,680. Enrique Touceda and Ralph De Vries to Allegheny Ludlum Steel Corp.

Providing articles of magnesium with oxidic layer by anodic treatment in electrolytes which consists in subjecting articles to action of a solution composed of ammonium chloride in absence of electric current prior to anodic oxidation. No. 2,382,702. Gerhard Elssner and Ernst Schroder.

Manufacture of metallic magnesium by thermal reduction of solid phase magnesium oxide with solid phase calcium carbide. No. 2,382,713. Fritz Hansgirg to Marine Magnesium Products Corp.

Refining aluminum which comprises heating mass comprising aluminum containing alloy and aluminum dissolving metal from lead, bismuth, cadmium, thallium, and mixtures thereof, with solution of aluminum in the metal, etc. No. 2,382,723. Gustaf Kirsebom.

Preserving color of high copper-containing metals which comprises dipping metal containing at least 40% copper into aqueous glycolic acid bath. No. 2.382.865. Harry Dittmar to E. I. du Pont de Nemours & Co.

Aluminum alloy made by alloying the following: Copper, cobalt, nickel, molybdenum, magnesium, silver, vanadium, tungsten, chromium, cadmium, and aluminum. No. 2,383,026. John Toleik.

Processing magnesium-containing beryllium comprising producing magnesium vapor and beryllium fluoride vapor, condensing vapors together, and melting resulting condensate at temperature at which beryllium fluoride reacts with magnesium to produce beryllium. No. 2,383,281. Charles Willmore and Frank Chew to Aluminum Co. of America.

Heat treating a preheated high-speed tool steel having secondary hardness range upon drawing. No. 2,383,299. Frederick Endress to Tuff-Hard Corp.

Removing oxidation from beryllium copper alloy consisting in subjecting alloy to bath of 85% pure phosphoric acid to produce surface capable of being plated. No. 2,383,434. Harry Hovis to Hamilton Watch Co.

Beneficiation of iron ores which comprises blunging aqueous comminuted iron ore pulp in presence of alkali-soluble compound of inorganic anion combined with polyvalent metal selected from alkaline earth metals and heavy metals, establishing pH of at least 10, and then agitation with aeration in presence of anion-active collecting agent, selected from fatty acids, resin acids and soaps derived from such acids, and a phosphate compound from metaphosphates and polyphosphates. No. 2,383,467. Julius Clemmer and Ballard Clemmons to the Secretary of the Interior of the United States of America.

Rolled composite metallic sheet comprising hard aluminum-alloy layers, characterized by resistance to mutual bonding under pressure, and intermediate each two layers a foil of commercially pure aluminum bonding assembly into permanent integral sheet structure. No. 2,383,511. Richard Reynolds.

Ferrous metal ice tray for receiving materials to be frozen, possessing on its material contacting surfaces an adherent protective coating comprising iron phosphate and thereover a moisture repellent baked flexible, adherent and abrasion resistant layer containing titanium dioxide and combined polymerization products of alkyd resin, a urea formaldehyde resin and a melamine formaldehyde resin. No. 2,383,589. Albert Bunting and Arthur Schultz; said Schultz to said Bunting.

* *Continued from Vol. 577, Nos. 2, 3, 4.*

Reclaiming magnesium as alloy metal from scrap material containing magnesium metal. No. 2,383,659. Yurii Lebedeff to American Smelting and Refining Co.

Cleaning and pickling ferrous metals comprising subjecting metal to dilute non-oxidizing acid in presence of thiazolinyl sulfide as inhibitor, for controlling corrosion of metal by acid. No. 2,383,681. Paul Pinkney and Halsey Stevenson to E. I. du Pont de Nemours & Co.

Burnish gold preparation which comprises metallic gold, metallic silver, and powdered sulfur. No. 2,383,704. Kermit Ballard to E. I. du Pont de Nemours & Co.

Electrodeposition of cadmium from aqueous cyanide-cadmium bath, comprising effecting deposition in presence of isoamketaldoresin and sulfonated vegetable oil. No. 2,383,798. Richard Hull to E. I. du Pont de Nemours & Co.

Composition for removing deposits from acid-corrodible metals comprising hydrochloric acid, spent lactic acid obtained as residue from solvent extraction of fermentation lactic acid, and oxalic acid. No. 2,383,800. Aaron Johnson to E. I. du Pont de Nemours & Co.

Retort for recovery or refining of metallic magnesium. No. 2,383,856. Fritz Hansgirg to North Carolina Magnesium Development Corp.

Aqueous bath for electrodepositing copper, comprising copper, formate radicals and ammonium radicals, and having pH value between 2 and 4 electrometric. No. 2,383,895. Jesse Stareck and Frank Passalacqua, now by judicial change of name, Frank Passal, to United Chromium, Inc.

* *Organic*

1-Methoxy-2-amino-4-nitro-5-methyl-benzene and process of making same. No. 2,381,877. Marion Carpenter to Burton T. Bush, Inc.

Polyhydric alcohol mixed ester of a monocarboxylic acid having ethylenic double bonds in the 2 and 4 positions. No. 2,381,880. Martin Cupery to E. I. du Pont de Nemours & Co.

Polyhydric alcohol mixed ester of a beta-furylacrylic acid and a monofunctional monocarboxylic acid of different structure. No. 2,381,881. Henry Rothrock to E. I. du Pont de Nemours & Co.

Polyhydric alcohol mixed ester of a cyano unsaturated monocarboxylic acid having ethylenic double bonds in 2 and 4 positions. No. 2,381,882. Martin Cupery to E. I. du Pont de Nemours & Co.

Polyhydric alcohol ester of a cinnamalacetic acid and coating composition containing product. No. 2,381,883. Merlin Brubaker to E. I. du Pont de Nemours & Co.

Polyhydric alcohol mixed ester of an alpha.beta-ethylenic-alpha-(alken-1-yl) monofunctional monocarboxylic acid and another monofunctional monocarboxylic acid. No. 2,381,885. John Sauer to E. I. du Pont de Nemours & Co.

Polyhydric alcohol ester of an acylacrylic acid. No. 2,381,886. Martin Cupery to E. I. du Pont de Nemours & Co.

Polyhydric alcohol mixed ester of a monofunctional alpha-beta-ethylenic-beta-aryl monocarboxylic acid and another monofunctional monocarboxylic acid. No. 2,381,887. John Sauer to E. I. du Pont de Nemours & Co.

Preparation of polyhydric alcohol mixed esters of fatty acids of naturally occurring oils and alpha, beta-unsaturated monofunctional monocarboxylic acids. No. 2,381,888. Courtland Agre to E. I. du Pont de Nemours & Co.

Polyhydric alcohol ester of a thienylacrylic acid. No. 2,381,889. Merlin Brubaker to E. I. du Pont de Nemours & Co.

Preparing aromatic morpholines and parathiazines. No. 2,381,935. William Strain and Joseph Dickey to Eastman Kodak Co.

Organic substance subject to deterioration caused by action of molecular oxygen, containing catalyst of vanadium, chromium, manganese, iron, metal deactivator to deactivate catalyst, said deactivator being identical etc., to catalyze oxidation of organic substance, and having incorporated metal deactivator to deactivate catalyst, said deactivator being identical with compound obtained by condensing ortho-hydroxy substituted aromatic aldehyde with sugar amine containing a single primary amino group. No. 2,381,952. Ivan Gubelmann to E. I. du Pont de Nemours & Co.

Producing normally liquid polyenes free of halogen comprising treating acyclic hydrocarbons of ethylene, butenes, propylene, liquid propylene polymers, etc., with free halogen of chlorine and bromine and aluminum halide catalyst for producing a complex. No. 2,381,987. Bernard Shoemaker and Edmond d'Ouville to Standard Oil Co.

Separating mixture of ethyl benzene and ethylene glycol monomethyl ether, said components forming a minimum boiling binary azeotrope and also forming a minimum boiling ternary azeotrope with water. No. 2,381,996. Ward Bloomer to The Lummus Co.

Ether of 2-methyl-2-hydroxy-butene-3. No. 2,382,031. Frank Soday to The United Gas Improvement Co.

Bis (2-cyanoethyl) ether and process for making same. No. 2,382,036. Herman Bruson to The Resinous Products & Chemical Co.

Obtaining dehydrated ethanol, which comprises distilling aqueous solution of ethanol in rectification column in presence of agent selected from methanol and acetone, to produce agent-ethanol composition free of water at top of column. No. 2,382,044. Webster Fisher to Eastman Kodak Co.

Preparing gamma-acetopropanol and gamma-valerolactone. No. 2,382,071. Lucas Kyrides and Ferdinand Zienty to Monsanto Chemical Co.

In fluid pressure actuatable device, a hydraulic fluid comprising liquid polymeric methyl siloxane. No. 2,382,082. Rob McGregor and Earl Warrick to Corning Glass Works.

Recovering pure m-cresol or p-cresol which comprises subjecting mixture to action of paraffinic hydrocarbon solvent containing aromatics and olefins. No. 2,382,142. Karl Engel to Allied Chemical & Dye Corp.

Vapor phase oxidation of benzene to phenol with oxygen-containing gas, which comprises carrying out oxidation in presence of gaseous iodine. No. 2,382,148. Robert Harman to The Solvey Process Co.

Preparing 3-amino-1,2,4,-triazoles. No. 2,382,156. Donald Kaiser to American Cyanamid Co.

Dehydrating aqueous acetic acid which comprises distilling off water in azeotropic admixture with paraldehyde. No. 2,382,181. Hanns Staudinger, Karl Tuerck, and Eric Brittain to The Distillers Co. Ltd.

Stabilizing normally unstable furfural comprising adding to furfural, organic amide to inhibit deterioration. No. 2,382,207. Rock Comstock and Howard Reeves, Jr. to Bay Chemical Co. Inc.

Reaction products of aldehydes and diazine derivatives. No. 2,382,211. Gaetano D'Alelio and James Underwood to General Electric Co.

Producing nitroparaffins which comprises reacting in vapor phase dry nitrogen peroxide and paraffin by passing mixed gases thru converter packed with catalyst selected from compounds of arsenic and antimony. No. 2,382,241. Norman Levy to Imperial Chemical Industries Ltd.

Treating aromatic hydrocarbon to produce substantial yield of aryl alkenes

which comprises subjecting aromatic hydrocarbon to action of diolefinic hydrocarbon in presence of zinc chloride and a carrier. No. 2,382,260. Raymond Schaad to Universal Oil Products Co.

Manufacture of a:a-bis-(beta'-hydroxyalkyl) -aryl-acetonitriles. No. 2,382,285. Franz Bergel, Nathan Hindley, Alexander Morrison, and Heinrich Rinderknecht, to Roche Products Ltd.

Separation of tartaric acids, saccharic acid and similar hydroxy carboxylic acids in mixture resulting from oxidation of a carbohydrate material. No. 2,382,288. Geza Braun and Orville Breivik to Standard Brands, Inc.

Alpha-beta-unsaturated alkenephosphondiamide. No. 2,382,309. Lyle Hamilton to E. I. du Pont de Nemours & Co.

Preparing ester-ethers of hydroxy acids which comprises reacting camphene with acid of malic acid, glycolic acid, lactic acid, etc., in presence of acid catalyst of sulfuric acid and sulfonic acids. No. 2,382,313. Clyde Henke to E. I. du Pont de Nemours & Co.

Alkylating benzene with propylene in presence of solid phosphoric acid catalyst. No. 2,382,318. Vladimir Ipatieff and Raymond Schaad to Universal Oil Products Co.

Preparing organic cation exchange product which comprises sulfonating a solid organic carbonizable material with conc. liquid sulfonating agent, washing and drying, and further sulfonating with sulfur trioxide. No. 2,382,334. Ray Riley and Frederick Nachod to The Permutit Co.

Catalyst for dehydrogenation of normally gaseous paraffin hydrocarbons to corresponding olefines. No. 2,382,394. John Bremner, Peter Reynolds and Arthur Taylor to Imperial Chemical Industries Ltd.

Isomerizing pinene-containing material, which comprises heating material in presence of a chlorite until isomerization is partially complete. No. 2,382,397. William Carson, Jr. to Hercules Powder Co.

2-Substituted furan-3,4-dicarboxylic acids and their corresponding saturated analogues. No. 2,382,418. Klaus Hofmann to Ciba Pharmaceutical Products, Inc.

Producing ketenes and ketene derivatives. No. 2,382,425. William Koch.

Monoazo compounds. No. 2,382,433. James McNally and Joseph Dickey to Eastman Kodak Co.

Preparing copper phthalocyanine. No. 2,382,441. William Reynolds and Sylvester Scully to Interchemical Corp.

Production of cyclohexane from hydrocarbon mixture boiling in gasoline boiling range comprising open chain hexanes, methylcyclopentane and benzene. No. 2,382,445. William Ross and Philip Pezzaglia to Shell Development Co.

Production of cyclohexane from hydrocarbon mixture comprising methylcyclopentane, cyclohexane and open chain paraffins. No. 2,382,446. William Ross and Philip Pezzaglia to Shell Development Co.

Producing unsaturated carboxylic acid, which comprises reacting ketene and a ketone in presence of acidic condensing agent selected from volatile halides of trivalent metals and acidic boron compounds. No. 2,382,464. Albert Boese, Jr. to Carbide and Carbon Chemicals Corp.

Recovery of pure butadiene from a C4 hydrocarbon fraction containing same in admixture with 1-butene, 2-butenes and normal butane. No. 2,382,473. Frederick Frey to Phillips Petroleum Co.

Producing resin acid lactone which comprises reacting crystalline hydroresin acids with a strong mineral acid. No. 2,382,545. Richard Cox to Hercules Powder Co.

Preparing dihalopropionic esters which comprises treating acrylonitrile concurrently with halogen and alcohol in acidic medium. No. 2,382,548. James D'Ianni to Wingfoot Corp.

Producing levulinic acid in which dextrose-containing carbohydrate and acid are reacted to produce a mixture of humin and levulinic acid. No. 2,382,572. Walter Meyer to A. E. Staley Mfg. Co.

Recovering vinylacetylene in concentrated form from a C4 hydrocarbon cream containing same and other aliphatic C4 hydrocarbons. No. 2,382,603. Charles Buell to Phillips Petroleum Co.

Esterification reaction product and method of making same. No. 2,382,612. Melvin De Groote and Bernhard Keiser to Petrolite Corp. Ltd.

Preparation of a meta-substituted aromatic amine, comprising catalytic hydrogenation of compound selected from acetals and lower dialkyl esters of a meta-nitro aromatic aldehyde. No. 2,382,613. Joseph Dickey and William Strain to Eastman Kodak Co.

Glycol esters of phenylphosphonic acid. No. 2,382,622. Arthur Fon Toy to Victor Chemical Works.

Production of limonene which comprises heating pinene with organic acid in presence of organic acid amide. No. 2,382,641. Morris Kharasch and William Reynolds to Research Corp.

Making 4-methyl-phenyl-acetone. No. 2,382,686. Wilhelm Wenner to Hoffmann-La Roche, Inc.

Organic material containing to stabilize material against oxidation, aliphatic mercaptan containing at least 5 carbon atoms per molecule and in which a sulfhydryl group is joined to carbon atom. No. 2,382,700. Lawrence Eby to Standard Oil Development Co.

Producing diolefin which comprises subjecting heterocyclic compound of furan series to action of a dehydrogenation catalyst in presence of excess of hydrogen and acidic substance to effect scission of ring structure. No. 2,382,749. Henry Singleton to Standard Oil Development Co.

Preparing sulphene amides which comprises reacting a thiazyl 2-sulphene amide having unsubstituted amide group with amine stronger than ammonia. No. 2,382,793. Louis Howland to United States Rubber Co.

Reaction product of myrcene and acrylonitrile. No. 2,382,803. Alexander Miller and Theodore Bradley to American Cyanamid Co.

Reacting alpha-chloro-styrene with water in presence of aqueous hydrogen chloride and a metal chloride dissolved therein. No. 2,382,867. William Emerson to Monsanto Chemical Co.

Preparation of di(methoxymethoxy) ethane which comprises refluxing 1,3-dioxolane, methylal, and sulfuric acid, neutralizing catalyst with sodium hydroxide, etc. No. 2,382,874. William Gresham to E. I. du Pont de Nemours & Co.

Manufacture of salts of lactic acid, which comprises adding saccharide of monosaccharides and aligosaccharides to alkali of alkali metal hydroxides and carbonates and alkaline earth metal hydroxides. No. 2,382,889. Ritchie Hart Lock.

Organic substance, normally subject to deterioration caused by molecular oxygen, containing catalyst of chromium, iron, copper and their compounds, effective to catalyze oxidation, antioxidant, to retard deterioration in absence of said catalyst, and having incorporated therein a metal deactivator. No. 2,382,904. Charles Pedersen to E. I. du Pont de Nemours & Co.

Manufacture of 2:4-diaryl-pyrroles. No. 2,382,915. Maurice Rogers to Imperial Chemical Industries Ltd.

5-nitroso-2:4-diphenylpyrrole. No. 2,382,916. Maurice Rogers to Imperial Chemical Industries Ltd.

Manufacture of sulphonic acids which comprises reacting with a sulphonating acid, a 2:4-diarylpyrrole. No. 2,382,917. Maurice Rogers to Imperial Chemical Industries Ltd.

p-Amino-p'-methyl amino diphenyl sulphone. No. 2,382,924. Rudolf Tschesche to Schering Corp.

Manufacture of a phenol by vapor phase oxidation of aromatic hydrocarbon, wherein phenol formed is fractionally condensed from product gases leaving uncondensed a residual acidic gaseous mixture, improvement which comprises washing residual gaseous mixture with aqueous alkali-metal phenate solution. No. 2,382,944. Frank Porter to The Solvay Process Co.

N-hydrocarbon-substituted alkanolamine salts of halo-phenols. No. 2,382,976. Gerald Coleman to The Dow Chemical Co.

Separating mixture containing at least two of bases 3-picoline, 4-picoline, and 2,6-lutidine which comprises including in mixture phenol, and fractionally distilling mass. No. 2,383,016. George Riethof to Pittsburgh Coke & Iron Co.

Stabilizing monomeric polymerizable unsaturated organic compound selected from polymerizable styrene compounds, acrylates and vinyl esters, against polymerization during storage and handling, which comprises mixing hematoxylinoid material with monomeric material. No. 2,383,043. Edwin Cline to Allied Chemical & Dye Corp.

Making toluene from petroleum naphtha. No. 2,383,072. Alex Oblad to Standard Oil Co.

Alkamine derivatives of o-alkoxymethyl benzoic acid. No. 2,383,074. Robert Parker and Arthur Hill to American Cyanamid Co.

Making halogenated ethers by splitting carbon-to-oxygen-to-carbon linkages of aliphatic cyclic ethers containing at least two such linkages in heterocyclic ring to form halogenated open chain ethers containing no more ether linkages than number of carbon-to-oxygen-to-carbon linkages in cyclic ethers. No. 2,383,091. Walter Toussaint and Louis MacDowell, Jr. to Carbide and Carbon Chemicals Corp.

Dispersible thiocarbanilide comprising thiocarbanilide individual particles of which are coated with film of sulfide promoter selected from organic esters of dithiophosphoric acid, xanthates and water soluble mercaptobenzothiazoles, the coating producing product which is readily dispersible in water and in pulp in froth flotation operations. No. 2,383,106. Robert Booth to American Cyanamid Co.

Improving organic nitrosation-sulphitation product which comprises extracting impurities from product in aqueous phase containing emulsion breaker of water-soluble alcohols, ketones and ethers, with nonaromatic hydrocarbon liquid. No. 2,383,120. William Fessler to The Solvay Process Co.

Producing dry acetylsulphanilyl chloride from aqueous slurry which comprises adding water immiscible inert organic liquid to slurry to expel water out of acetylsulphanilyl chloride, drying resulting cake. No. 2,383,128. Martin Hultquist to American Cyanamid Co.

Sulphopolycarboxylic acid monoamides and their preparation. No. 2,383,130. Alphons Taeger and Kathryn Lynch to American Cyanamid Co.

Producing 2,2'-dichlorohydrazobenzene which comprises reducing orthochlornitrobenzene to 2,2'-dichloroazoxybenzene by reducing sugar and caustic soda and reducing azoxybenzene to 2,2'-dichlorohydrazobenezene by means of zinc and caustic soda. No. 2,383,134. Harold Lacey and Robert Brouillard to American Cyanamid Co.

Producing acetic acid esters of cyanohydrins included in alpha,alpha and alpha,beta cyanohydrins which comprises subjecting cyanohydrin to reaction with ketene. No. 2,383,137. Hans Lecher and James Dixon to American Cyanamid Co.

Separation of styrene by crystallization from a light oil styrene fraction. No. 2,383,174. Horace Weir to The United Gas Improvement Co.

Producing styrene which comprises interacting benzene and a C2 aliphatic hydrocarbon in presence of catalyst comprising alumina and chromia. No. 2,383,179. Gustav Egloff to Universal Oil Products Co.

Producing butadiene which comprises subjecting a butanediol dialkanoate to contact with zirconium oxide. No. 2,383,205. William Mattox to Universal Oil Products Co.

Producing mono-olefins containing at least four carbon atoms and phenols comprising heating an alkylphenol phenol having alkyl substituent with tetraphosphoric acid. No. 2,383,279. Gordon Stillson and John Fishel to Gulf Research & Development Co.

Producing a sulphonyl chloride which comprises reacting hydrocarbon selected from saturated aliphatic and alicyclic hydrocarbons with sulphuryl chloride in presence of catalyst and actinic light. No. 2,383,319. Morris Kharasch to E. I. du Pont de Nemours & Co.

Reacting unsubstituted saturated aliphatic carboxylic acid compound, in liquid phase, with sulphuryl chloride in presence of actinic light. No. 2,383,320. Morris Kharasch to E. I. du Pont de Nemours & Co.

Acid esters of alkylated 1,4-naphthohydroquinones and process for manufacture of same. No. 2,383,392. Walter Karrer to Hoffmann-La Roche Inc.

Making polymeric carboxylic anhydrides from reactants consisting of maleic anhydride, a terpene, and a polymerizable mono-olefinic compound selected from styrene and indene. No. 2,383,399. William Lundquist to E. I. du Pont de Nemours & Co.

Recovering isoprene and piperylene from hydrocarbon mixtures containing same. No. 22,671. Rupert Morris and Harry Finch to Shell Development Co.

Dicyanoethyl acetoacetic acid compounds. No. 2,383,444. Herman Bruson to The Resinous Products & Chemical Co.

Mineral oil composition comprising viscous mineral oil fraction and in admixture to stabilize said fraction, a salt of an acidic, phosphorus- and sulfur-containing product, said product being selected from reaction products obtained by reaction of P_2S_5 and unsaturated ketone, etc. No. 2,383,498. Ferdinand Otto and Ronald Meyer and Robert Moran to Socony-Vacuum Oil Co. Inc.

Treating racemic alpha-hydroxy-beta, beta-dimethyl-gamma-butyrolactone in benzene with a diacyl-d-tartaric acid anhydride to form mixture of esters of dextrorotatory and laevorotatory lactone stereomers, treating mixture with pyridine to form pyridine salts of lactone-esters, and separating sparingly soluble pyridine salt of laevorotatory lactone-ester. No. 2,383,524. Max Tishler and Ralph Beutel to Merck & Co. Inc.

Enriching acetylene which comprises continuously passing solvent therefor through absorption zone, passing impure acetylene gas through said absorption zone, continuously freezing effluent solvent from absorption zone whereby enriched acetylene is liberated. No. 2,383,547. William Hamill and Richard Vogt to E. I. du Pont de Nemours & Co.

Separating acetylene from ethylene from gas mixture containing them which comprises partially liquefying gas in presence of added carbon dioxide, fractionating partially liquefied gas to recover overhead gaseous fraction containing ethylene and carbon dioxide and liquid fraction containing acetylene and carbon dinxide. No. 2,383,551. Robert Isham to Danciger Oil & Refineries, Inc.

Heating fatty glyceride with monohydric alcohol in presence of alcoholysis

catalyst thereby providing liquid body containing monohydric alcohol esters and glycerine. No. 2,383,579. Harold Allen and William Kline to Colgate-Palmolive-Peet Co.

Reacting fatty glyceride with a low molecular weight monohydric alcohol in presence of alcoholysis catalyst to provide liquid body containing glycerine and esters of fatty acids. No. 2,383,580. Clarence Arrowsmith and John Ross to Colgate-Palmolive-Peet Co.

Reacting polyhydric alcohol with fatty acids having twelve to twenty carbon atoms per molecule and esters in presence of alcoholysis catalyst to provide liquid body containing fatty acid partial ester of a polyhydric alcohol. No. 2,383,581. Clarence Arrowsmith and John Ross to Colgate-Palmolive-Peet Co.

Reacting fatty glyceride with a low molecular weight monohydric alcohol in presence of methyl alcohol. No. 2,383,596. Emil Dreger to Colgate-Palmolive-Peet Co.

Alcoholysis of fatty glycerides. No. 2,383,599. Glenn Glossop to Colgate-Palmolive-Peet Co.

Treating fatty glyceride containing free fatty acid with low molecular weight monohydric alcohol in presence of acidic esterification catalyst, etc. No. 2,383,601. Gerald Keim to Colgate-Palmolive-Peet Co.

Reacting fatty glyceride with low molecular weight monohydric alcohol in presence of alkaline alcoholysis catalyst to produce liquid body containing esters of alcohol with fatty acids from glyceride, glycerine and unreacted alcohol. No. 2,383,602. Gerald Keim and John Ross to Colgate-Palmolive-Peet Co.

Condensation of a nitroalkane with a ketone of aliphatic ketones and alicyclic ketones to produce corresponding dinitrohydrocarbon, which comprises effecting condensation in presence of secondary amine. No. 2,383,603. Millard Larrison and Henry Hass to Purdue Research Foundation.

Alcoholysis of fatty glycerides which comprises reacting fatty glyceride with monohydric alcohol to produce liquid body containing esters, glycerine and partially reacted glycerides. No. 2,383,614. Joseph Percy to Colgate-Palmolive-Peet Co.

Producing sodium cyclohexylsulfamate, comprising dispersing cyclohexylammonium N-cyclohexylsulfamate in aqueous solution containing dissolved sodium hydroxide, agitating and heating dispersion. No. 2,383,617. John Robinson to E. I. du Pont de Nemours & Co.

Cyclic acetals of unsaturated aldehydes. No. 2,383,622. Murray Senkus to Commercial Solvents Corp.

Alcoholysis of fatty glycerides. No. 2,383,632. Walter Trent to Colgate-Palmolive-Peet Co.

Treating fatty glycerides. No. 2,383,633. Walter Trent to Colgate-Palmolive-Peet Co.

Depolymerizing olefin polymers which comprises contacting olefin polymer with adsorbent earth type of catalyst. No. 2,383,642. Leslie Franklin and Edward Dunlay to Gulf Oil Corp.

Preparation of nitrotoluene in which compound selected from toluene and a lower nitrotoluene is reacted with nitrating mixture to produce a nitrotoluene product and spent nitrating mixture. No. 2,383,707. Marvin Carl to Atlas Powder Co.

Preparing organic compound of unsaturated aldehydes and ketones which comprises passing olefinic hydrocarbon and gases containing molecular oxygen over a catalyst selected from metal selenites and tellurites. No. 2,383,711. Alfred Clark and Richard Shutt to Battelle Memorial Institute.

Producing mixture of carbon monoxide with hydrogen in form for making synthetic methanol. No. 2,383,715. Fredrik de Jahn.

Reacting paraffin hydrocarbon having at least three carbon atoms with sulfur trioxide in vapor phase. No. 2,383,752. Michael Sveda to E. I. du Pont de Nemours & Co.

Production of resin-forming unsaturated aromatic hydrocarbons including resin-forming unsaturated aromatic hydrocarbons boiling above 200°C. and other aromatic hydrocarbons in good quality. No. 2,383,772. Newcomb Chaney and Edwin Hall to The United Gas Improvement Co.

Copper ammonium acetate absorption and purification method for separating butadiene from hydrocarbon mixture containing it together with butenes and acetylenes. No. 2,383,784. Alfred Fleer to Shell Development Co.

Methods for reacting furfuryl alcohol and acid condensation products of furfuryl alcohol with glyoxal and polymerized glyoxal and products produced thereby. No. 2,383,793. Mortimer Harvey and Robert Durst to Harvel Research Corp.

Polymeric organo-silicon compound comprising oxygen atoms and divalent aromatic radicals linked to silicon atoms. No. 2,383,817. Eugene Rochow to General Electric Co.

Preparation of organosilicon halides which comprises effecting reaction between hydrocarbon halide and silicon component of contact mass comprising silicon and an oxide of copper. No. 2,383,818. Eugene Rochow and William Gilliam to General Electric Co.

Preparing silicone resins. No. 2,383,827. Murray Sprung to General Eelectric Co.

New capillary active diacyl imide, N-benzoyd-n-dode-cane-sulphamide. No. 2,383,859. Winfrid Hentrich and Heinz-Joachim Engelbrecht and Erik Schirm.

Higher molecular ketene containing mono valent aliphatic substituent radical of 4 to 27 carbon atoms. No. 2,383,863. Richard Hueter.

p-Aminobenzenesulphonamides and a process for their manufacture. No. 2,383,874. Henry Martin, Rudolf Hirt and Otto Neracher to J. R. Geigy A. G.

alpha-Naphthylmethyl ester of a alpha-hydroxy aliphatic carboxylic acid. No. 2,383,897. Jack Thurston and John Grim to American Cyanamid Co.

Separation of di-tertiary butyl) peroxide from mixture containing it and tertiary butyl hydroperoxide. No. 2,383,919. Frederick Rust to Shell Development Co.

* *Paints, Pigments*

Making red lead from lead containing material consisting of a mixture of red and yellow litharge and metallic lead. No. 2,383,220. Ralph Seabury and Robert Daily to General Motors Corp.

Making opaque white lead alumino-silicate pigments consisting of chemically combined lead oxide PbO), alumina and silica, and lead sulphate associated therewith. No. 2,383,284. Louis Barton.

Modifying pigment comprising artificially prepared calcium carbonate which comprises passing slurry comprising said pigment, water and one selected from thinning agents consisting of casein, modified starch and sodium silicate, through a nozzle at a velocity of not less than 100 feet per second until reduction is effected in adhesive requirement of said calcium carbonate. No. 2,383,509. Harold Rafton to Raffold Process Corp.

* *Continued from Vol. 577, Nos. 2, 3, 4.*

* *Paper, Pulp*

Treating dilute alkaline black liquor containing effluent from paper mill which comprises passing it through storage reservoir and inoculating effluent as it enters with liquor containing cellulose and lactone acid destroying microorganisms having property of producing carbon dioxide and other acidic substances and thereby causing precipitation of lignin, fatty acids and resins from effluent. No. 2,382,010. Paul Hodges; Lillian Hodges administratrix of said Paul Hodges, deceased.

Treating paper to make safety record paper, including applying to paper solution in a volatile liquid of oil with substance advent to dyes in inscribing material, said solvent selected from diglycol laurate and glyceryl monoricinoleate. No. 2,382,828. Bernard Staneslow to Moore Business Forms, Inc.

Separating and recovering constituents of tall oil. No. 2,382,890. James Loughlin.

Transparentizing opaque, unpigmented, fibrous paper, which consists in impregnating paper with composition consisting of solution of triethylene glycol ester of hydrogenated rosin in ethyl acetate. No. 2,383,660. Julius Little to Hercules Powder Co.

* *Petroleum*

Removing mercaptans from hydrocarbon oil which comprises contacting oil with aqueous solution containing free alkali metal hydroxide, alkali metal naphthenates, solventizer to keep naphthenates in solution and "methyl cellosolve." No. 2,381,859. George Ayers and Lawrence Henderson to The Pure Oil Co.

Manufacture of high anti-knock gasoline of high lead susceptibility boiling within range up to 300° F. No. 2,382,039. Du Bois Eastman and Charles Richker to The Texas Co.

Alkylating isoparaffin with olefin to form high antiknock motor fuel, said isoparaffin containing lower boiling unreactive hydrocarbons admixed therewith. No. 2,382,067. Ludwig Kniel to The Lummus Co.

Hydrocarbon conversion process including subjecting charge comprising an isoparaffin to catalytic dehydrogenation, etc. No. 2,382,100. Robert Ruthrupff.

Cracking of a gas oil to obtain a gasoline of high octane rating, etc. No. 2,382,107. August Schutte to The Lummus Co.

Manufacturing motor fuel hydrocarbons from normally gaseous saturated hydrocarbons. No. 2,382,117. Halsted Warrick to The Texas Co.

Concentrating conjugated diolefin of four to seven carbon atoms per molecule from a hydrocarbon mixture consisting of said diolefin and close-boiling olefin of same number of carbon atoms per molecule. No. 2,382,119. Charles Welling to Phillips Petroleum Co.

Producing solidified fuel from hydrocarbon distillate without aid of fatty acid soap which comprises mixing distillate with aqueous solution of water-soluble alkali metal petroleum sulfonates and an alkali metal hydroxide. No. 2,382,144. William Griesinger to The Atlantic Refining Co.

Production of gasoline from hydrocarbon oils heavier than gasoline which comprises cracking oil in presence of a calcined composite of a precipitated silica gel containing deposited hydrated zirconia. No. 2,382,239. Edward Lee to Universal Oil Products Co.

Treating interior surface of pipe line employed for transportation of petroleum products, to facilitate removal of scale deposits and reduce scale formation, which comprises introducing into pipe line, concurrently with liquid petroleum product, aqueous suspension of organic hydrophilic colloid peptizing hard water boiler scale. No. 2,382,262. Lewis Scherer and Joseph South to The Texas Co.

Conversion of hydrocarbon oils. No. 2,382,270. William Stratford to The Texas Co.

Conversion of hydrocarbons comprising flowing hydrocarbon reactants in contact with moving confined stream of contact mass particles of small size, each of which particles comprises core particle of refractory adsorptive material and a metal sheath. No. 2,382,371. Ernest Utterback to Socony-Vacuum Oil Co. Inc.

Continuous regeneration of powdered catalyst material containing carbonaceous deposits. No. 2,382,382. Leonard Carlsmith and Henry Ogorzaly to Standard Oil Development Co.

Recovering hydrocarbons from hydrocarbon oil-bearing formation penetrated by input well and output well, comprising transmitting free oxygen-containing gas into formation through input well, initiating flameless oxidation of carbonaceous material to heat oil therein and effect distillation of low boiling point components of oil. No. 2,382,471. Frederick Frey to Phillips Petroleum Co.

Regeneration of carbonized silica-alumina type catalysts by burning-out in presence of gas containing free oxygen. No. 2,382,472. Frederick Frey to Phillips Petroleum Co.

Separation and recovery of low-boiling C3 to C5 aliphatic olefins in concentrated form from hydrocarbon mixtures containing olefins in admixture with close-boiling paraffins. No. 2,382,505. Walter Schulze to Phillips Petroleum Co.

Separation and recovery of low-boiling C3 to C5 aliphatic olefins from hydrocarbon mixtures. No. 2,382,506. Walter Schulze to Phillips Petroleum Co.

Dehydrating petroleum emulsion, which comprises forming condenser by placing emulsion in a dielectric container having grounded external conductive coating and electrode in contact with emulsion, charging this condenser by connecting electrode and coating with source of rectified alterating current, then discharging condenser. No. 2,382,697. Walther Deutsch.

Slushing composition comprising viscous petroleum fraction to which is added degras, oil solution of sodium salts of oil-soluble sulfonic acids formed on treating petroleum stocks with concentrated sulfuric acid and dicyclohexylamine naphthenate. No. 2,382,699. Gordon Duncan to Standard Oil Development Co.

Catalytic cracking process in which a finely divided catalyst is carried in suspension in oil vapors through a cracking zone and some of such catalyst is carried over into subsequent fractionating zone, introducing into fractionating zone a paraffinic oil, taking off from bottom of said zone a suspension of catalyst in paraffinic oil. No. 2,382,724. Conrad Kollenberg to Standard Oil Development Co.

Execution of catalytic reactions wherein reactants are contacted with catalyst consisting of active liquid aluminum halide-hydrocarbon complex in presence of a hydrogen halide in reaction zone comprising a metal-containing surface, inhibiting corrosion of metal-containing surface which comprises maintaining in catalyst a halide of a metal of alkali and alka-

line earth metals. No. 2,382,753. Richard Treseder to Shell Development Co.

Conversion of residual oils containing constituents unvaporizable without decomposition under normal pressure conditions which comprises adding to oil an absorptive powder to completely absorb unvaporizable constituents and form discrete particles of nonadhesive powder. No. 2,382,755. Charles Tyson to Standard Oil Development Co.

Producing saturated paraffinic hydrocarbons of branched-chain structure from hydrocarbon charging stocks by means of aluminum chloride catalyst activated by hydrogen chloride. No. 2,382,814. Wayne Proell and Frank Ovitz to Standard Oil Co.

Operating aluminum chloride isomerization process. No. 2,382,815. Mack Sutton and Cecil Nysewander to Standard Oil Co.

Conversion of isomerizable saturated hydrocarbon which comprises subjecting hydrocarbon in presence of hydrogen halide to contact with composite catalyst comprising previously fused mixture of halides of aluminum and zirconium. No. 2,382,881. Vladimir Ipatieff and Herman Pines to Universal Oil Products Co.

Isomerization of saturated hydrocarbons which comprises subjecting hydrocarbon in presence of hydrogen halide to contact with composite catalyst comprising previously fused mixture of halides of aluminum and zinc. No. 2,382,882. Vladimir Ipatieff and Herman Pines to Universal Oil Products Co.

Production of branched chain paraffinic hydrocarbons wherein paraffinic hydrocarbon containing at least one tertiary carbon atom per molecule is alkylated with olefinic hydrocarbon in presence of hydrogen fluoride catalyst, and portion of used catalyst containing organic diluent is recycled to alkylation zone. No. 2,382,899. Robert Newman to Universal Oil Products Co.

Petroleum hydrocarbons subject to catalytic deterioration caused by copper and its compounds in presence of oxygen having incorporated therein an antioxidant to inhibit deterioration in absence of copper and its compound, a copper deactivator, and compound of formula described in patent. No. 2,382,905. Charles Pedersen and Richard Bender to E. I. du Pont de Nemours & Co.

Stabilization of petroleum hydrocarbons using a 2-mercaptothiazole. No. 2,382,906. Charles Pedersen and Richard Bender to E. I. du Pont de Nemours & Co.

Conversion of hydrocarbons. No. 2,382,910. John Pinkston, Jr. to Universal Oil Products Co.

Catalyst manufacture which comprises conjointly precipitating hydrated silica and hydrated alumina by commingling aqueous solutions of aluminum compound, alkali metal silicate and ammonium compound. No. 2,382,951. Jacob Ahlberg and Charles Thomas to Universal Oil Products Co.

Manufacture of motor fuel of high antiknock value which comprises treating naphtha containing olefinic and aromatic constituents with conc. sulfuric acid, etc. No. 2,383,056. Arthur Goldsby to The Texas Co.

Effecting separation between hydrocarbon bodies of different chemical constitution by solvent extraction which comprises extracting mixture of hydrocarbons with concentrated aqueous levulinic acid, etc. No. 2,383,057. Howard Gross and Irvine German to The Texas Co.

Catalytically treating gasoline to transform hydrocarbons therein into more desirable hydrocarbons for motor fuel use which comprises admixing light isoparaffin with gasoline and dissolving aluminum bromide therein. No. 2,383,123. Manuel Gorin to Socony-Vacuum Oil Co. Inc.

Converting normally liquid olefinic hydrocarbon into normally gaseous olefinic hydrocarbons including propylene and butylenes which comprises subjecting liquid hydrocarbon to cracking conditions in presence of catalyst composite comprising aluminum sulfate and silica. No. 2,383,206. William Mattox to Universal Oil Products Co.

Catalytic conversion of hydrocarbons over solid absorbent contact catalyst which are progressively deactivated by deposition of carbonaceous residues thereon during conversion. No. 2,383,218. Walter Schulze to Phillips Petroleum Co.

Removing hydrogen sulphide from hydrocarbon liquids containing both hydrogen sulphide and carbonyl sulphide, which comprises contacting hydrocarbon liquid with aqueous solution of diethanolamine, etc. No. 2,383,416. Robert Reed to The Girdler Corp.

Isomerizing normal paraffin containing at least 4 carbon atoms per molecule in vapor phase by passing paraffin through catalyst bed of aluminum chloride sorbed in a porous carrier, aluminum chloride concentration uniformly increasing, and carrying out isomerization in presence of halogen-containing promoter. No. 2,383,586. Forrest Blanding to Standard Oil Development Co.

Isomerizing normal pentane in vapor phase in presence of halogen-containing promoter and aluminum chloride. No. 2,383,608. Charles Lynch to Standard Oil Development Co.

Catalytic dehydrogenation of hydrocarbons which comprises passing hydrocarbons over catalyst comprising magnesium oxide, iron oxide, and promoter selected from fluorides of alkali and alkaline earth metals. No. 2,383,643. Stewart Fulton and Kenneth Kearby to Standard Oil Development Co.

Raising melting point of asphalt which comprises heating asphalt with lower dialkyl sulfate. No. 2,383,769. Solomon Caplan to Harvel Research Corp.

* *Photographic*

Light sensitive layer on base comprising a diazo compound and member of iodine and bromine salts of alkali and alkaline earth metals, zinc and metalloids of fifth and sixth groups of periodic table. No. 2,381,984. Maximilian Reichel to General Aniline & Film Corp.

Recording sound photographically which comprises forming relief image of the sound, treating relief image with organic compound containing a heterocyclic nucleus and adapted for imbibition printing and capable of forming a non-diffusible salt of a metal, etc. No. 2,382,670. Merrill Seymour and Willard Peterson to Eastman Kodak Co.

Forming colored image in photographic gelatin layer containing a light sensitive silver salt of an ester of the leuco compound of a vat dye. No. 2,382,671. Merrill Seymour and Richard Young to Eastman Kodak Co.

Making relief image on metal plate that comprises coating one surface of plate with sensitive layer, placing on other side of metal plate a layer transparent to X-rays carrying image consisting of a metal more absorptive of X-rays than is metal of the plate, etc. No. 2,382,674. Cyril Staud to Eastman Kodak Co.

Concentrated selenium toning solution adapted to be diluted with water to many times original volume to form a photographic toning bath, said concentrate including aqueous solution of selenium compound having a toning action, and a nitrogen-containing thiosulfate. No. 2,382,683. Walter Wadman and Lionel Butcher to Eastman Kodak Co.

Making subtractive multicolored picture from multi-colored record in which process at least two primary color separations must be modified, etc. No. 2,382,690. John Yule to Eastman Kodak Co.

Photo-mechanical negative for reproducing designs, comprising transparent, plastic, backing member; opaque first layer of metallic lacquer prepared of mix of finely ground aluminum powder in nitro-cellulose lacquer and second layer of opaque, metallic, lacquer overlying first layer, said opaque layers constituting making material for plastic backing member and readily penetrable by stylus. No. 2,383,566. Benjamin Rudnick to Republic Aviation Corp.

* *Polymers*

Beta-furylacrylic acid-modified alkyd resin. No. 2,381,884. Henry Rothrock to E. I. du Pont de Nemours & Co.

Finishing wood to produce hard, tough smooth surface, free of blistering or bubbling, with a resinous coating, which is polymerizable by heat. No. 2,381,944. Melville Wilson and William Berry to Interchemical Corp.

Resinous product characterized by solubility in varnish oils, comprising co-ester reaction product of an acidic natural resin, a cyclopentadiene adduct of maleic anhydride, and a polyhydric alcohol. No. 2,381,969. William Catlow, Jr. to Bakelite Corp.

Production of cellulose ethers, which comprises etherifying cellulosic materials with di-ethyl sulphate in presence of sodium hydroxide, and tetra-ethyl ethylene diamine. No. 2,381,972. Henry Dreyfus.

Nonpolycyclopentadiene monohydrohalides. No. 2,382,037. Herman Bruson to The Resinous Products & Chemical Co.

Trihalo-tetrahydronorpolycyclopentadienes. No. 2,382,038. Herman Bruson to The Resinous Products & Chemical Co.

Reacting petroleum oil fraction containing cyclic hydrocarbons with aldehyde in presence of condensing agent from BF3 etherate, BF3 alcoholate, $H3BO2F2$, and $H3BO2F2BF3$ to produce resinous material. No. 2,382,184. Kenneth Thompson to The Atlantic Refining Co.

Nitrogenous condensation products obtained by condensing member selected from monomeric 1.2-alkylene imines and their non-crystalline high molecular polymerization products with chlorocarbonic acid ester of higher aliphatic alcohol. No. 2,382,185. Heinrich Ulrich to General Aniline & Film Corp.

Refining rosin to remove color bodies therefrom. No. 2,382,196. George Arnold to The Texas Co.

Toluene-insoluble copolymer of a drying oil free of conjugated double bonds, which oil has been oxidized, and vinyl compound selected from styrene and acrylonitrile. No. 2,382,213. Lawrence Dunlap to Armstrong Cork Co.

Preparing synthetic plastics, films and like which after drying are insoluble in organic solvents at room temperatures. No. 2,382,238. Walter Laufenberg, Erich Maslanka and Helmut Weissenburger to The Licoro Corp.

Removing acetylene polymers from crude acrylonitrile which comprises treating crude acrylonitrile with bromine or chlorine to halogenate acetylene polymers and insufficient to halogenate acrylonitrile. No. 2,382,383. Erwin Carpenter to American Cyanamid Co.

Preparation of cellulose in form for esterification to ester of a lower fatty acid of improved heat stability and haze characteristic, which comprises adding magnesium compound to processing water containing dissolved calcium, etc. No. 2,382,399. Robert Darling to Hercules Powder Co.

Manufacturing insulated electrical conductors, which comprises, placing flexible fibrous jacket over conductor, saturating fibrous jacket with solution of partially polymerized nitrogen halo phosphide in benzol, evaporating solvent, and further polymerizing residue in fibrous jacket. No. 2,382,423. Henry Kauth to General Cable Corp.

Compound for lining sealing flanges of can ends and like which is resistant to animal and vegetable oils, which comprises mixture of solid linear polymer of polybutene, wood flour and amorphous wax, said mixture being dispersed in solvent. No. 2,382,443. John Robinson, Frank Bopp and Paul Millelot, Jr. to American Can Co.

Oil-resistant thermoplastic and method of making, which comprises mixing scrap rubber or reclaimed rubber with technical tolyl dichlor phosphine and consisting of reaction product containing catalyst complex of toluene and PC13 in presence of aluminum chloride catalyst and retene. No. 2,382,462. David Beaver to Monsanto Chemical Co.

New thermoplastic compositions obtained by mixing a rubber with organic phosphine halide. No. 2,382,497. George Martin to Monsanto Chemical Co.

Electrical insulating material made by preparing homogeneous mixture containing polymerized monoolefine and polymerized mono-nuclear aromatic vinyl hydrocarbon compound. No. 2,382,498. John Morley to International Standard Electric Corp.

Polymerizing mixture of a 1-carboalkoxybutadiene-1,3 and compound of formula described. No. 2,382,629. Herbert Gudgeon and Rowland Hill to Imperial Chemical Industries Ltd.

Resinous homopolymer of a 2-aryl-4-methylene-1,3-dioxolane. No. 2,382,640. William Kenyon and Thomas Murray, Jr. to Eastman Kodak Co.

Making plastic synthetic rubber-like material which comprises polymerizing, in presence of member of diazonium salts and compounds capable of generating diazonium salts, material preponderantly a compound of group of polymerizable acyclic 1,3-diene hydrocarbons and their monohalogen derivatives. No. 2,382,684. Herbert Walker to E. I. duPont de Nemours & Co.

Dissolving softening, gelatinizing, and swelling agents for plastic base material selected from cellulose ethers, cellulose esters, and resins, and as plasticizing agent, compound composed of a single heterocyclic nucleus having as part of its nuclear ring structure at least one—C(SR)=N— group. No. 2,382,714. Winfrid Hentrich, Wilhelm Kaiser, and Rudolf Endres.

Producing poly-glycerol resin which comprises injecting steam into the molten residue of a glycerine still, etc. No. 2,382,764. Harland Young, Chesley Young, and Purdy Bradford to Industrial Patents Corp.

Preparing plastic conversion product of elastic polychloroprene which comprises milling mixture containing same in presence of air with reaction product of aliphatic aldehyde and amine selected from secondary aliphatic, aralkyl, alicyclic and heterocyclic amines. No. 2,382,792. Louis Howland to United States Rubber Co.

Copolymerization of aqueous emulsion containing butadiene-1,3 hydrocarbon and mono-vinyl compound, with aid of polymerization catalyst, in presence of unsubstituted naphthyl mono-mercaptan. No. 2,382,802. William Messer to United States Rubber Co.

Making indicia bearing plates of synthetic plastic material which consists in coating a fluorescent material carrying portion of synthetic plastic with light sensitive material, etc. No. 2,382,806. James Motson.

Making plastic material resembling uncured natural rubber which com-

* *Continued from Vol. 577, Nos. 2, 3, 4.*

prises polymerizing 1,3-butadiene hydrocarbons and haloprenes in aqueous emulsion in presence of compound described in patent. No. 2,382,812. Joseph Parker to E. I. du Pont de Nemours & Co.

Manufacture of amides of fossil resins, which comprises heating fossil resins with polyethylene amine, etc. No. 2,382,838. Karl Weber to Armstrong Cork Co.

Composition containing: cellulose derivative selected from cellulose ethers and esters; and a lower alkyl aleuritate. No. 2,382,919. William Sartori.

Polymeric linear mono vicinal glycol formal which prior to polymerization consisted of linear mono vicinal glycol formal containing functional groups selected from hydroxy aliphatic and formal groups. No. 2,382,938. William Gresham to E. I. du Pont de Nemours & Co.

Manufacturing safety glass, which comprises assembling two layers of glass and interposed layer of plastic material to form a "sandwich" and in which plastic interlayer projects beyond glass layers to provide plastic border. No. 2,382,956. James Boicey and Irvin Willey to Libbey-Owens-Ford Glass Co.

Apparatus for producing plastic sheet material by flowing sheet of dope continuously from a dope box on series of casting plates, causing sheet causing sheet of dope to set on plates and stripping set sheet from plates. No. 2,383,047. Henry Dreyfus to Celanese Corp. of America.

Polymerizing conjugated butadiene hydrocarbon in aqueous emulsion in presence of inorganic compound containing both sulfur and oxygen, which normally functions as reducing agent. No. 2,383,055. Charles Fryling to The B. F. Goodrich Co.

Production of luminescent cast synthetic resin articles, which comprises luminescent pigment and finely divided polymerized methyl methacrylate suspended in liquid polymerizable vehicle comprising monomer from esters of acrylic and methacrylic acids. No. 2,383,067. Maurice Macht and Malcolm Renfrew to E. I. du Pont de Nemours & Co.

Polymerization of ethenoid monomers. No. 2,383,069. Barnard Marks to E. I. du Pont de Nemours & Co.

Manufacture of lamp comprising bulb of organic plastic material. No. 2,383,076. Marvin Pipkin to General Electric Co.

Resinous product resulting from copolymerization of acyclic terpene having three double bonds per molecule, and aromatic compound having attached an unsaturated aliphatic substituent and atomic grouping selected from vinyl and vinylene groups. No. 2,383,084. Alfred Rummelsburg to Hercules Powder Co.

Polymerizing hydrocarbons, that includes urging together pair of surfaces with one surface moving relative to other at high velocity, one of surfaces being finely roughened and containing silicon carbide as polymerizing catalyst, passing stream of hydrocarbons between surfaces and causing hydrocarbons to become polymerized. No. 2,383,189. William Hancock to Hancock Oil Co. of California.

Stabilizing phenolic resins. No. 2,383,283. Robert Auxier and William Weltman to Westinghouse Electric Corp.

Improving condensation product of a natural rosin with aldehyde obtained by condensation in presence of organic carboxylic acid and reaction product of said condensation product with aliphatic acid, which comprises contacting material with hydrogen in presence of active hydrogenation catalyst, hydrolyzing hydrogenated material to liberate carbinol and contacting carbinol with sulfating agent to produce sulfated product. No. 2,383,289. Edward Bried to Hercules Powder Co.

Insolubilizing and stabilizing cellulose ether compositions soluble in organic solvents and subject to deterioration by heat whereby they become less soluble in such solvents and less subject to such deterioration which comprises dispersing therein compound described in patent. No. 2,383,361. Shailer Bass and Lawrence Rauner and Paul Lipke, Jr. to The Dow Chemical Co.

Polymerizing in aqueous emulsion a butadiene-1,3 hydrocarbon in presence of water-soluble complex compound containing central heavy metal atom connected by coordinating valence to nitrogen-containing coordinating group which is neutral body possessing no electrovalent charge. No. 2,383,425 William Stewart to The B. F. Goodrich Co.

A poly-omega-cyano-isopropyl ether of an aliphatic alcohol having from two to six, inclusive, hydroxyl groups per molecule. No. 2,383,443. Herman Bruson to The Resinous Products & Chemical Co.

Making condensation product which comprises heating wood digestion resin with aldehyde in presence of condensation catalyst, said wood digestion resin being product produced by heating ligneous wood and material selected from natural resin acids with water until cellular structure of wood has disappeared and recovering resin as residue. No. 2,383,558. Robert Martin to Hercules Powder Co.

Manufacturing plastic insulation for extrusion molding which comprises, mixing binder comprising rubbery polyvinyl resin with flameproofing plasticizer and with solvent for said resin to produce a fluid cement, admixing with cement mineral wool and amosite asbestos fibers. No. 2,383,604. George Leistensnider and Harry Rinehart to Johns-Manville Corp.

Preparation of low temperature polymerization catalyst for low temperature polymerization of olefinic material, comprising dissolving Friedel-Crafts catalyst in alkyl halide and passing cooled solution through alkaline solid. No. 2,383,627. Robert Thomas, Donald Field, and Harold Reynolds, Jr. to Jasco, Inc.

Making flexible sheets for packing and like comprising forming mixture of solvent reduced thermoplastic polychloroprene binder and asbestos fibers, and heat curing binder by immersing sheet in bath of mineral oil. No. 2,383,716. James Driscoll to Johns-Manville Corp.

Molded object characterized by nacreous sheen and consisting of polystyrene having incorporated salt selected from sodium, potassium, and magnesium salts of sulfated alkyl alcohols. No. 2,383,765. Russell Bradshaw to The Dow Chemical Co.

Production of rubberlike copolymers of diolefins and unsaturated ketones. No. 2,383,782. Robert Dreisbach to The Dow Chemical Co.

Millable composition comprising rubbery polymer of butadiene and a gel comprising (a) solid polyvinyl ester selected from polyvinyl chloride, polyvinyl acetate and copolymers of vinyl chloride and vinyl acetate and (b) product produced by blowing with oxygen an alkyl ester of abietic acid. No. 2,383,789. Mortimer Harvey to Harvel Research Corp.



Brake lining comprising asbestos, organic friction material and a phenol-aldehyde resin binder, said organic friction material comprising particles selected from solid infusible condensation products of furfuryl alcohol in presence of acidic agent, etc. No. 2,383,790. Mortimer Harvey to Harvel Research Corp.

Product of condensation under acid condition of maleic anhydride with organic liquid which is obtained by heat condensation of formaldehyde and monomeric terpene alcohol. No. 2,383,791. Mortimer Harvey to Harvel Research Corp.

Protein dissolved in a liquid furfuryl alcohol-formaldehyde fusible resin. No. 2,383,792. Mortimer Harvey to The Harvel Research Corp.

Composition of matter comprising low-temperature olefin-diolefin interpolymer, together with polyethylene, sulfur, and small, significant quantities of zinc oxide, stearic acid and an organic sulfide. No. 2,383,839. Nathan Beekley, Jr. to Jasco, Inc.

Producing polycondensation products for working into fibers and films which consists in mixing thio-semicarbazide with sebacic acid anhydride. No. 2,383,880. Otto Moldenhauer and Helmuth Bock.

Depolymerizing ring substituted methyl styrene polymer. No. 2,383,921. Frank Soday to The United Gas Improvement Co.

Depolymerizing styrene-ring substituted methyl styrene-copolymer. No. 2,383,922. Frank Soday to The United Gas Improvement Co.

* *Processes and Methods*

Removing suspended particles of acidic composition from gases which comprises adding to gases salt of organic amine having ionization constant greater than 5×10^{-5} at 25° C., and thereafter subjecting gases to electrical precipitation. No. 2,381,879. Joseph Chittum to Western Precipitation Corp.

In a power reclaiming system, means to direct flow of a stream of highly heated waste gases containing heat desired to be reclaimed, means to direct flow of a stream of water in counterflow relation to said stream of gases, etc. No. 2,381,947. Frazer Gay.

Determining proportion in which constituent of gas or vapor of variable constitution is present therein during interval of time. No. 2,382,381. Willard Calvert and Ben White to American Viscose Corp.

Dehydrogenating hydrocarbons which comprises contacting vaporized hydrocarbons with catalyst prepared by hydrolyzing ethyl ortho-silicate in presence of an oxide of chromium. No. 2,382,582. Robert Ruthruff to process Management Co., Inc.

Filling container with liquid from tank containing the liquid and a gas under pressure in closed circuit in which gravity flow of liquid from tank is dependent upon pressure resulting from expulsion of air and foam from container. No. 2,382,696. Marie de Milleville.

Mixing fluids which tend to segregate into separate phases when in contact with each other, comprising alternately decreasing and increasing pressure on fluids to cause alternate vaporization and condensation. No. 2,382,871. Clarence Gerhold to Universal Oil Products Co.

Controlling self-propagating exothermic reaction, which comprises placing in a crucible main body of material wherein metallic oxide is intermixed with a metallic element capable upon being heated of reducing such oxide to produce molten metal, disposing on top of such body a layer of metallic oxide and intermixed metallic element having a higher intensity of reaction, and setting off such layer which in turn sets off main body of reaction material. No. 2,383,040. Charles Cadwell to The Electric Railway Improvement Co.

Separation of liquid hydrocarbons from waxes comprising adding to a mixture, a sufficient quantity of organic silicane to cause separation of said hydrocarbon and wax. No. 2,383,521. Frank Sowa.

Increasing efficiency of countercurrent propane fractionation system wherein charging stock is introduced into one end of fractionation zone at high temperature and propane is introduced at other end of said zone at low temperature. No. 2,383,535. John Dickinson and Henry Wickham and Oliver Morfit to Standard Oil Co.

Measuring pH of solutions over protracted period of time and at elevated temperature which comprises: contacting solution with one surface of thin glass membrane having second surface in contact with a reference solution, said membrane being composed of a sodium-calcium-silicate glass. No. 2,383,709. Henry Cary and Warren Baxter to National Technical Laboratories.

Crystallization of salts from aqueous solutions by evaporation by solar radiation, dissolving in aqueous liquid a dry mixture containing Schaffer's salt, an alkali nitrite and an iron salt, converting reaction liquor into green dyestuff solution adapted to increase rate of evaporation of water from salt solution. No. 2,383,763. Rudolf Bloch and Isaac Schnerb to Palestine Potash Ltd.

Liquid-liquid solvent extraction process for separation of hydrocarbon mixture with selective solvent, comprising carrying out extraction in presence of calcium naphthenate. No. 2,383,768. Marinus Buis and Leonard Belchetz to Shell Development Co.

* *Rubber*

Depositing rubber from latex which comprises bringing latex into contact with surface coated with alkaline water-soluble mixture of calcium oxide, calcium nitrate, and zinc acetate. No. 2,381,865. George Buchanan.

Chlorination of rubber. No. 2,382,342. Edwin Spaulding to Hercules Powder Co.

Producing chlorinated rubber of viscosity between 15 and 28 centipoises and of improved compatibility with alkyd resins. No. 2,382,353. Henry Tomkinson to Hercules Powder Co.

Treating rubber which comprises vulcanizing in presence of an amine salt of a 2-mercapto 4-aryl thiodiazole 5-thione. No. 2,382,524. George Watt to Wingfoot Corp.

Vulcanizing rubber in presence of accelerator which is a pyridazine sulfide. No. 2,382,769. Robert Armstrong to United States Rubber Co.

Vulcanizing rubber which comprises incorporating therein sulfur, a primary organic rubber-vulcanization accelerator, and compound having general formula Aryl-S-NH$_2$. No. 2,382,813. Philip Paul to United States Rubber Co.

Manufacturing porous expanded rubber products which comprises producing vulcanized gas expanded cell tight structure; cutting cell structure to desired final shape, submerging in boiling water until cells become inter-communicating. No. 2,383,110. Alfred Cooper to Rubatex Products, Inc.

Preparation of oil-resisting rubbers. No. 2,383,540. Geoffrey Gee and Stanley Stokes to The British Rubber Producers' Research Association.

Adherent sheet material to provide finished surface of article, said sheet comprising intermediate foundation layer of elastic vulcanized rubber composition, layer of decorative material adhered to face of foundation layer, and layer of pressure adhesive unvulcanized rubber composition at other face of foundation layer. No. 2,383,598. Alfred Glidden to The B. F. Goodrich Co.

Flexible tubular structure comprising inner tube of rubber, surrounding sleeve of braided glass fibers, and external coating of flexible plastic penetrating through interstices of said sleeve. No. 2,383,733. Arthur Parker to The Parker Appliance Co.

Manufacturing cell-tight expanded cellular rubber, preparing rubber mix containing sulphur for vulcanization, coating surface of rubber with mixture of antimony pentasulphide and precipitated sulphur, etc. No. 2,383,734. Hans Pfleumer to Rubatex Products, Inc.

* *Specialties*

Fuel composition comprising granular mixture of naphthalene and additional hydrocarbons of same low flash point as said naphthalene but of higher calorific value, finely divided coal material, and hydrocarbons of higher flash point and higher calorific value than said coal material. No. 2,381,891. Fred Elkan to "Incendor," Coal Igniter Co., Inc.

Lubricating oil comprising mineral oil and reaction product of polymerized propylene with phosphorus pentasulphide. No. 2,381,907. Everett Hughes and Warner Scovill to The Standard Oil Co.

Lubricant comprising petroleum oil of lubricating viscosity, oil of a polyvalent metal salt of an alkylated phenol and oil of an aliphatic sulfide. No. 2,381,912. Frank Kavanagh, Bruce Farrington and James Clayton to California Research Corp.

Adhesive composition comprising resin, hydrogenated oil, the glycerids of which have been converted to stearin, amorphous wax to retard crystallization and to give easy release from a mold, paraffin wax to control melting point of adhesive, and antioxidant. No. 2,381,946. Kenneth Findley, Arthur Krueger, Roy Hecker and Jesse Matteson and Ralph Findley to The F. G. Findley Co.

Liquid lubricating composition comprising hydrocarbon oil subject to deterioration at elevated temperatures and to inhibit deterioration, a polyvalent metal salt of a substituted acid of pentavalent phosphorus. No. 2,382,043. Bruce Farrington, James Clayton, and John Rutherford to California Research Corp.

Making granulated soap product which comprises providing soap in paste form and subjecting soap to action of mulling rotors. No. 2,382,063. Floyd Joyce and Erik Lindhardt to National By-Products, Inc.

Lubricant comprising mineral lubricating oil, substance selected from group (1) consisting of phosphorized and sulfurized-phosphorized fatty material and organic substance selected from group (2) consisting of aryl, aralkyl, aryl-alkyl, aralkyl-aryl, aralkyl-alkyl and dialkyl polysulfides, to improve load carrying ability of mineral lubricating oil. No. 2,382,115. Joseph Stucker to The Pure Oil Co.

Preparing lubricant which comprises reacting sulfur and a fatty body in atmosphere of hydrogen sulfide and then phosphorizing until final product is non-corrosive. No. 2,382,121. William Whittier to The Pure Oil Co.

Detergent briquette chemically and physically stable, hard, strong and non-deliquescent consisting of dense crystalline aggregate of following: trisodium phosphate, sodium silicate, sodium carbonate, tetrasodium pyrophosphate, and water. No. 2,382,163. James MacMahon to The Mathieson Alkali Works, Inc.

Detergent briquette physically stable, hard, strong, and non deliquescent. No. 2,382,164. James MacMahon to The Mathieson Alkali Works, Inc.

Detergent briquette consisting of dense crystalline aggregate of following: trisodium phosphate, sodium silicate, soda ash, water, a phosphate of class of sodium hexametaphosphate and sodium tetraphosphate and alkali-stable surface active agent. No. 2,382,165. James MacMahon to The Mathieson Alkali Works, Inc.

Combination chrome tannage for hides, comprising treating sulphur dioxide reduced dichromate tanning liquor with organic acid selected from oxalic, formic and acetic acids and mixtures thereof. No. 2,382,204. Hiram Channon to Virginia Smelting Co.

Linoleum composition comprising filler particles; binder therefor including a copolymer of drying oil free of conjugated double bonds, which oil has been oxidized and vinyl compound selected from styrene and acrylonitrile, and acid catalyst for polymerization of said oil; said binder characterized by exceptional resistance to attack by alkali. No. 2,382,212. Lawrence Dunlap to Armsrtong Cork Co.

Production of factis which comprises reacting in solvent naphtha, levulinic acid, soy bean oil and sulphur. No. 2,382,284. Isaac Bencowitz to Texas Gulf Sulphur Co.

Floor covering, comprising asphalt impregnated paper felt base and coating therefor containing a gelled polyhydric alcohol mixed ester of a polyunsaturated monocarboxylic acid having alpha,beta-ethylenic unsaturation and acids of a natural drying oil and a pigmented filler. No. 2,382,297. Martin Cupery to E. I. du Pont de Nemours & Co.

Preserving wood by impregnation with wood-preserving fluids in which organic wood preservative is carried in light organic solvent. No. 2,382,374. Galen Wood to Wood Treating Chemicals Co.

Clear, transparent mixture of an oil, water, a sorbitan monolaurate, and a condensation product of mannitan monolaurate with ethylene oxide. No. 2,382,398. Tulio Cordero to United-Rexall Drug Co.

Oil-in-water type dispersion wherein individual dispersed particles each comprise intimate blend of polyvalent metal soap and rubber, and are dispersed in aqueous vehicle. No. 2,382,417. James Hendricks to Minnesota Mining & Mfg. Co.

Light-weight non-metallic product comprising palmetto pith, fibrous material, and binding agent. No. 2,382,448. Charles Schuh to Carbide and Carbon Chemicals Corp.

Fluid pressure system, a fluid consisting of mineral oil and polymerized hydrocarbon. No. 2,382,527. Charles Allderdice, Jr. to The Bell Co., Inc.

Producing solid soap from fatty oils and fats, which comprises heating batch of fatty material in presence of anhydrous sodium carbonate, etc. No. 2,382,530. Laszlo Auer.

Manufacture of solid soaps from fatty materials by anhydrous saponification method, which comprises heating fatty material, together with rosin and a dry saponifying agent selected from alkali metal oxides and hydroxides and alkali metal carbonates and bicarbonates. No. 2,382,531. Laszlo Auer.

Stable oil-in-water dispersion of vulcanized fatty oil, containing methyl cellulose and another surface-active agent which reduces surface tension of oil-water interface. No. 2,382,532. Laszlo Auer.

Making battery separators which comprises treating tree bark fibers with caustic solutions, removing caustic solution, adding to fibers a binder

* *Continued from Vol. 577, Nos. 2, 3, 4.*

and a wetting and foam producing chemical solution. No. 2,382,621. Edward Fairclough to Willard Storage Battery Co.

Diluted aqueous emulsion of cellulose acetate consisting of solution of cellulose acetate in isophorone, aqueous solution of gelatine and maleic anhydride and sulfonated castor oil. No. 2,382,636. Oskar Huppert.

Manufacturing aluminum soap grease which comprises saponifying material with gelatinous hydrous aluminum hydroxide containing enough water to give gel-like consistency in presence of lubricating oil. No. 2,382,694. Ralph Darley to Standard Oil Development Co.

Anti-freeze solution for use at low atmospheric winter temperatures in automobile engine cooling systems which comprises mixture of ethylene and propylene glycols and water to which are added sodium carbonate and disodium phosphate to exert buffer action, cyclohexylamine in corrosion inhibiting proportions and a butyl phthalate. No. 2,382,698. Theodore Donlan to Standard Oil Development Co.

Lubricant comprising waxy mineral lubricating oil and pour depressing amount of a phthtalein. No. 2,382,730. Eugene Lieber to Standard Oil Development Co.

Adhesive tape comprising cellulosic sheeting coated with tacky, pressure-sensitive adhesive composition consisting of triethylene glycol ester of hydrogenated rosin, rubber, and zinc oxide. No. 2,382,731. Julius Little to Hercules Powder Co.

Producing foam baths, taking stoichiometric mixture of crystallized aluminum sulfate, sodium bicarbonate to produce carbon dioxide and substance capable of producing foam, adding solid small particles of a non-heat conducting substance. No. 2,382,732. Leo Lowenstein.

Lubricating composition comprising hydrocarbon lubricating oil having incorporated therein iron in form of oil-soluble ferric dithiocarbamate derived from secondary aliphatic amine. No. 2,382,781. Frederick Downing and Howard Fitch to E. I. du Pont de Nemours & Co.

Rust inhibiting oil composition for use in presence of water in systems containing metal susceptible to corrosion by water comprising oil and a hydroxylamine compound. No. 2,382,818. Herbert Rhodes and Roger Watson to Standard Oil Co.

Lubricant comprising glycol and starch prepared by heating polyhydric alcohol selected from group consisting of glycerin, ethylene glycol, etc., with raw starch. No. 2,382,860. James Cook to Union Oil Co. of California.

Fluid composition for use in fluid actuated apparatus consisting of normally liquid non-cyclic acetal containing alkanol group, compound selected from vegetable oils, blown vegetable oils and reaction products of such oils with compound selected from mono-, di- and trihydric alcohols, and a diluent selected from mono, di, and trihydric alcohols. No. 2,382,931. John Woodhouse and Kenneth Walker to E. I. du Pont de Nemours & Co.

Lubricant comprising mineral oil, soap of preferentially oil-soluble sulfonic acids obtained by treating petroleum distillate with conc. sulfuric acid, and mixture of saturated aliphatic oxygen-containing compounds including alkyl ester, lactones, ketones, alcohols and alcohol-ketones, obtained by partial oxidation of petroleum hydrocarbons. No. 2,383,033. Elmer Adams and George Flint to Standard Oil Co.

Cork composition comprising granulated cork and granulated hollyhock pith material, and a binder. No. 2,383,096. Albin Warth and Paul Grabus, Jr. to Crown Cork & Seal Co., Inc.

Detergent mixture comprising orthodichlorbenzene, ethylene glycol monobutyl ether, glycerin, water, ethanolamine oleate soap. No. 2,383,114. Truman De Villiers to Cities Service Oil Co.

Chewing gum base comprising a terphenyl, a vinyl resin selected from polyvinyl acetate and polystyrene and a wax. No. 2,383,145. Joe Moose to Monsanto Chemical Co.

Lubricating grease comprising lithium stearate and dialkyl oxalate. No. 2,383,146. John Morgan to Cities Service Oil Co.

Low temperature blended grease comprising blend of mineral oil grease containing mineral lubricating oil, lithium soap and aluminum soap, with ester grease containing alkyl ester selected from alkyl acetyl ricinoleates, alkyl lactates, alkyl benzoates, and dialkyl oxalates, a lithium soap and an aluminum soap. No. 2,383,147. John Morgan to Cities Service Oil Co.

Protective grease for coating and protecting mechanical equipment and other exposed metal parts on outside of a submarine, comprising crude petrolatum, lithium soap, aluminum soap, lead soap, and finely divided metallic lead. No. 2,383,148. John Morgan and Russell Lowe to Cities Service Oil Co.

Insecticidal composition comprising as active toxic ingredients pyrethrins and insecticidal product selected from finely-ground yam beans and extracts of yam bean. No. 2,383,304. Robert Geary.

Self-emulsifiable composition comprising a tetraalkylthiuram sulphide, water, and compound selected from sodium, potassium, ammonium, and triethanolamine salts of dibenzylsulphanilic acid. No. 2,383,318. Eric Kay to Imperial Chemical Industries Ltd.

Commingling tar emulsion comprised of products of pyrolysis of petroleum oil and water with a liquefied normally gaseous hydrocarbon solvent. No. 2,383,362. Howard Batchelder to The United Gas Improvement Co.

Fractionating a tar emulsion comprised of water and tar produced in pyrolysis of petroleum oil, said tar containing readily heat polymerizable resin-forming unsaturated aromatic hydrocarbon components. No. 2,383,363. Howard Batchelder to The United Gas Improvement Co.

Mineral oil composition comprising viscous mineral oil having in admixture to stabilize said oil against oxidation, stable, non-corrosive, phosphorus- and sulfur-containing product obtained by reaction of phosphorus pentasulfide and dioleyl ketone. No. 2,383,494. Robert Moran and Ronald Meyer, Ferdinand Otto and Edward Oberright to Socony-Vacuum Oil Co., Inc.

Making a lubricant, comprising reacting a sulfide of phosphorus with an ester wax, and partially saponifying product by reacting with metal compound insufficient to complete the reaction whereby to produce mixture of reaction product and metal compound. No. 2,383,495. John Musselman to The Standard Oil Co.

Mineral oil composition comprising viscous mineral oil fraction having in admixture phosphorus- and sulfur-containing product obtained by reacting phosphorus pentasulfide with sulfurized dioleyl ketone. No. 2,383,497. Ferdinand Otto and Ronald Meyer to Socony-Vacuum Oil Co. Inc.

Polishing composition containing cerium oxide, barium carbonate, barium hydroxide, etc. No. 2,383,500. Lincoln Polan to Albert Polan, E. G. Polan, L. M. Polan, Charles Polan, and Lake Polan, Jr., doing business as Zenith Optical Co.

New washing composition comprising an anion active soapless synthetic surface active organic compound as a washing agent in aqueous solution, in admixture with an alkali metal acid triphosphate. No. 2,383,502. Oscar Quimby to The Procter & Gamble Co.

Treating wood or like cellular material embodying free water content which comprises reducing free water content by applying pressure at end of material while preheating thereby creating steam under pressure, and thereafter subjecting treated material while thus preheated to terpin hydrate treating material. No. 2,383,504. Christopher Luckhaupt to Henry Lucke.

Mineral oil composition comprising viscous mineral oil and in admixture to stabilize oil against oxidation, a salt of an acidic, phosphorus- and sulfur-containing product obtained by reaction, of P_2S_5 and a saturated aliphatic ketone. No. 2,383,510. Horace Redman and Everett Fuller to Socony-Vacuum Oil Co. Inc.

Cleansing and laundering composition comprising mixture of detergent selected from water-soluble salts of organic sulfonic acids and water-soluble salts of organic sulfonic acids and water-soluble salts of aliphatic sulfuric acid esters, and a nitrile of a fatty acid. No. 2,383,526. Nathaniel Tucker to The Procter & Gamble Co.

Spraying composition for coal comprising lubricating oil solvent extract together with blending oil. No. 2,383,543. Worth Gray to Standard Oil Co.

Treating insect infected areas comprising applying beta-hydroxyethylalkylamine wherein alkyl group contains at least six carbon atoms. No. 2,383,564. Anderson Ralston, John Barrett, and Miles McCorkle to Armous & Co.

Manufacture of adhesive compositions resistant to mineral oils which consists in reacting rubber with maleic anhydride and a saturated monohydric aliphatic alcohol in presence of organic peroxide catalyst. No. 2,383,569. Kenneth Roberts to The British Rubber Producers' Research Association.

Composition comprising waxy hydrocarbon oil, pour depressor comprising Friedel-Crafts condensation product of chlorinated wax and naphthalene and wax suppressor comprising organic ester of inorganic acid selected from boric acid and silicic acid. No. 2,383,605. Eugene Lieber and Caleb Hodges to Standard Catalytic Co.

Lubricant comprising waxy mineral lubricating oil and pour depressor consisting of Friedel-Crafts condensation product of monohydroxy derivatives of compounds selected from mono- and dinuclear saturated cyclic hydrocarbons with aromatic compound. No. 2,383,606. Eugene Lieber and Marvin Thorner to Standard Oil Development Co.

Magnesia base hardenable plastic composition consisting of calcined magnesite, pumice, diatomaceous earth, asbestos, silex, and asphaltum emulsion, to which is added plasticizing fluid consisting of magnesium chloride, magnesium sulphate and water. No. 2,383,609. Murray MacDonald and Christopher Schwendler and Frederick Schwendler to National Casket Co. Inc.

Hand cleaning solution comprising: polyvinyl alcohol, mannitol glycerol mono-oleate, tetrasodium pyrophosphate, trisodium phosphate, a mono alkyl derivative of a phenol mono sulfonate, cresylic acid potassium coconut oil soap mixture, and water. No. 2,383,610. John Morgan and Russell Lowe to Cities Service Oil Co.

Producing soap which comprises reacting fatty acid ester of a lower alkyl monohydric alcohol with saponifying agent. No. 2,383,630. Walter Trent to Colgate-Palmolive-Peet Co.

Producing soap which comprises continuously passing fatty acid ester of lesser alkyl monohydric alcohol and a saponifying agent through mixing zone, etc. No. 2,383,631. Walter Trent to Colgate-Palmolive-Peet Co.

Waterproofing bodies made of colloidal, crystalline inorganic hydrous oxides which contain structural water and are capable of swelling when in contact with water to form plastic hydrogels and have base exchange properties which comprises contacting with solution of salt the anion of which contains unsaturated carbon to carbon linkage and is capable of polymerization to a water-insoluble hydrophobic product. No. 2,383,647. Ernest Hauser to Research Corp.

Preparation of bituminous materials having high resistivity against heat and cold and low viscosity for use as binders, saturants, and adhesive compounds, which comprises blowing distillate free from asphalt derived from asphalt-containing crude with air. No. 2,383,701. Walter Becker and Wilhelm Maass.

Cleansing composition comprising mixture of a detergent selected from water-soluble salts of: organic sulfonic acids, alkyl sulfuric acids, etc., and alkylolamide selected from ethanolamides and glycerolamides of fatty acids. No. 2,383,737. Albert Richardson to The Procter & Gamble Co.

Cleansing and laundering composition. No. 2,383,738. Albert Richardson and Walter McAllister to The Procter & Gamble Co.

Cleansing and laundering composition comprising mixture of a water-soluble salt of an organic sulfuric reaction product and an amide. No. 2,383,739. Nathaniel Tucker to The Procter & Gamble Co.

Detergent composition. No. 2,383,740. Nathaniel Tucker to The Procter & Gamble Co.

Insecticidal composition comprising carrier and a benzyl dimethyl phenyl ammonium nitrophenate. No. 2,383,775. W. E. Craig and William Hester to Rohm & Haas Co.

Lubricant comprising waxy mineral lubricating oil and a pour-depressant, an oil-soluble Reimer-Tiemann reaction product of alkylated phenol and chloroform. No. 2,383,869. Eugene Lieber and Raymond Dean to Standard Oil Development Co.

Manufacturing soda soap grease which comprises continuously suspending anhydrous alkali in a mineral lubricating oil base stock and mixing said alkali-oil suspension with solution of a saponifiable fatty material in mineral lubricating oil base stock. No. 2,383,904. John Zimmer to Standard Oil Development Co.

Extreme pressure lubricant consisting of emulsion of mixture of mineral lubricating oil, lead soap of a high molecular weight fatty acid and oiliness agent, in water. No. 2,383,905. John Zimmer and George McNulty to Standard Oil Development Co.

Making soap-thickened compositions. No. 2,383,906. John Zimmer and Arnold Morway to Standard Oil Development Co.

Lubricant consisting of diethylene glycol monoalkyl ether, and sodium soap. No. 2,383,915. John Morgan to Cities Service Oil Co.

Lubricant consisting of a liquid alkyl lactate having extreme pressure agent dissolved therein. No. 2,383,916. John Morgan to Cities Service Oil Co.

Lubricant consisting of butyl lactate with extreme pressure addition agent dissolved therein. No. 2,383,917. John Morgan to Cities Service Oil Co.

* *Textiles*

Rendering textile resistant to attack by mold organisms which comprises impregnating with aqueous solution of copper salt derivatives of 8-hydroxy quinoline. No. 2,381,863. Paul Benignus to Monsanto Chemical Co.

Additional patents on all other classifications from the above volumes will be given next month.

* *Continued from Vol. 577, Nos. 2, 3, 4.*

Abstracts of Canadian Patents

Collected from Original Sources and Edited

Requests for further information or photostated copies of the patents reported below should be addressed to the Commissioner of Patents and Copyrights, Department Secretary of State, Ottawa, Canada.

CANADIAN PATENTS

Granted and Published Aug. 14, 1945

Method of producing plastic sheet material by casting volatile solvent plastic solution on plates. No. 429,355. Henry Dreyfus.

Apparatus for automatically measuring concentration of volatile compounds in gases. No. 429,374. American Smelting & Refining Co. (M. D. Thomas)

Triazine derivatives, and method of preparation, including s-triazinyl thio acetyl urea. No. 429,382. Canadian General Electric Co. Ltd. (G. F. D'Alelio)

Apparatus for producing bead-free mineral wool from molten mineral material. No. 429,388. Canadian Gypsum Co. Ltd. (Jos. R. Parsons)

Continuous, single-step, catalytic process for production of vinyl aldehydes. No. 429,390. Canadian Kodak Co. Ltd. (M. Gallagher, R. L. Hasche)

Bolting-cloth and grit gauze composed of viscose rayon in leno weave having mesh fixed by resinous condensation product of phthallic anhydride and glycerine, plasticized with castor oil. No. 429,408. Courtaulds Ltd. (R. A. McFarlane)

Improving resistance of casein or proteinaceous fibres to hot water or hot dilute acid, by formaldehyde-sulphuric, washing, treatment. No. 429,409. Courtaulds Ltd. (R. L. Wormell)

Phonograph record composition consisting of: shellac, mineral filler, 65 to 75 per cent of petroleum insoluble pine wood resin, 15-25 per cent ethyl cellulose, and 5-15 per cent castor oil. No. 429,417. Hercules Powder Co. (J. M. De Bell)

Process for preparation of ethanolamines, by closed vessel reaction of ethylene oxide and aqueous ammonia, at about 45 Cent. No. 429,418. The Honorary Advisory Council for Scientific and Industrial Research (Adrien Cambron)

Manufacture of gelatin from aqueous solutions, by concentration, addition of buffer salts of citric or tartaric acids, filtering, and recovering modified gelatin. No. 429,419. Industrial Patents Corp. (C. C. Zeigler)

Embalming method involving injection of a fluoragent, so that examination with fluorescent light reveals degree of diffusion of injected liquid. No. 429,488. (J. L. Switzer, R. C. Switzer)

Production of cellulose acetate sheet, by deposition from acetone solution, soaking deposited sheet for 20 hours in water to facilitate stripping from support. No. 429,490. Henry Dreyfus (J. H. Rooney, R. Hawtin, B. Shaw)

Coating composition, miscible with water, mineral, or gum spirits, prepared by dissolving resin in drying oil at elevated temperature, with the addition of urea thereto. No. 429,495. Eugen Hirsch.

Granted and Published Aug. 21, 1945

Converting perfumed hard milled soap containing acid into hard cake of bouyant milled soap, by boiling, addition of sodium bicarbonate, stirring, cooling, and shaping. No. 429,508. Chas. W. Kelley.

Method of manufacturing coherent asbestos pad, impregnated with rare metal catalysts, by deposition of metal containing asbestos slurry on reinforcing base, drying, and applying top reinforcing sheet. No. 429,512. Louis Lionel Shreir.

Production of high-quality, low-resin, cellulose by treating wood pulp with alkali metal hydroxide, sulphonated castor oil, aluminum hydroxide and calcium hydroxide. No. 429,514. Gustave Ullmann.

Dielectric, characterized by high dielectric constant and low power factor, even at low temperature, comprising a solution of benzo-phenone in liquid aryl hydrocarbon that is both ethylated and chlorinated. No. 429,516. Aerovox Corp. (R. M. Mantell)

Non-inflammable, dielectric, having high insulation value over wide temperature range, comprising dibromoethylbenzene. No. 429,517. Aerovox Corp. (R. M. Mantell)

Anti-static, anti-fogging sheet material composed of cellulose acetate having embedded in the surface thereof an alkyl aryl sulphonate wetting agent. No. 429,537. Canadian Celanese Ltd. (assignee of Celluloid Corp. E. Schweizer)

Method of preparing bis-(diamino s-triazinyl) thiocarbazide. No. 429,540. Canadian General Electric Co. Ltd. (G. F. D'Alelio, J. W. Underwood)

Process for manufacture of bis-(diamino pyrimidyl) carbazide. No. 429,541. Canadian General Electric Co. Ltd. (G. F. D'Alelio, J. W. Underwood)

Manufacture of alpha (methoxy methoxy) ether of methyl glycerate by hydrogenation methyl (methoxy methoxy) formyl aetate in methanol. No. 429,543. Canadian Industries Ltd. (D. J. Loder)

Preparation of glycol ethers by hydrogenating alkyl (alkoxy methoxy) acetate, catalytically, at 150-350 Cent, under 30-1000 atmospheres pressure. No. 429,544. Canadian Industries Ltd. (D. J. Loder, W. F. Gresham, D. B. Killian)

Preparation of low molecular weight polymeric methacrylic acid to water soluble polymer by treatment with ammonium persulfate, in water, at 80-170 Cent. No. 429,545. Canadian Industries Ltd. (H. R. Dittmar, D. E. Strain)

As new chemical compound, 1,4-dinitrobutene-2. No. 429,546. Canadian Industries Ltd. (R. G. Franklin, F. J. Wilkins)

Water-dispersion of finely divided synthetic liner polyamide, and method of preparation, as coating or impregnation composition. No. 429,547. Canadian Industries Ltd. (W. E. Catlin)

Process for manufacture of di(hydroxyaryl)alkanes of 10-14 carbon atoms in alkane group, and maximum of 34 carbon atoms separating hydroxyaryl groups. No. 429,549. Canadian Industries Ltd. (B. C. Pratt)

Vulcanizing rubber, by incorporation into rubber mix prior to vulcanization, zinc 2,2-dimethyl dimethylene dithiocarbamate. No. 429,550. Canadian Industries Ltd. (I. Williams, B. M. Sturgis)

Stable solution of polyhexamethylene adipamide and calcium chloride in methanol, containing 5-25 per cent adipamide; 10-30 per cent chloride; 45-85 per cent methanol. No. 429,551. Canadian Industries Ltd. (O. E. Schupp Jr.)

Impregnation of textile fibres by means of solution of synthetic linear polyamide. No. 429,552. Canadian Industries Ltd. (O. E. Schupp Jr.)

Clear coating composition adapted for finishing bowling pins, highly resistant to dirt pick up, containing cellulose nitrate and cetyl pyridium bromide. No. 429,533. Canadian Industries Ltd. (J. W. Clough)

Coating composition, which bakes to hard, colour stable film—(30 minutes at 375 Fahr.)—composed of vinyl halide polymer, light coloured pigment, and lecithin or cephaline. No. 429,554. Canadian Industries Ltd. (H. F. Ether)

Heat conductive tool for welding thermoplastic organic materials. No. 429,555. Canadian Industries Ltd. (E. E. Kilgour)

Glyoxal derivative of water-soluble hydroxyalkyl cellulose ether, insoluble in water, acetone, and lower monohydric aliphatic alcohols. No. 429,570. Carbide and Carbon Chemicals Ltd. (A. E. Broderick)

Extraction-separation process for recovering diethylene glycol monoalkyl ether from mixture containing the same and ethylene glycol. No. 429,571. Carbide and Carbon Chemicals Ltd. (A. C. Plewes)

Apparatus for electrical treatment of colloidal dispersions. No. 429,576. Dunlop Rubber Co. Ltd. (E. A. Murphy, F. J. Paton, J. Ansell)

Oil filter composed of porous filtering medium having intimately admixed therewith an alkyl hydrogen sulphate, or higher acyl derivative of a hydroxyalkyl sulphonic acid. No. 429,601. Simmonds Development Corp. Ltd. (P. E. Halstead)

Improved process for production of formal by condensation of formaldehyde with mono-methyl ether or ethylene glycol. No. 429,618. Camille Dreyfus (John L. Baggett)

Pat. 2,303,136. Soluble Oil. Patented Nov. 24, 1942. A low-cost, stable, homogeneous liquid composition of kerosene and rosin, useful as a cleaning liquid, insecticide, lubricant in metal working, coolant, etc. Miscible with water and hence readily removed from the field of action by the application of water. (Owner) Clement L. Perkins, Marion, Conn. Groups 28—33—93—96; 35—21. Reg. No. 331.

Granted and Published Aug. 28, 1945

Withheld from publication May 22, 1945.

Preparation of hydrated nitroguanidine tetrasulphate by reacting sulphuric acid and guanidnie nitrate, under stated conditions, and recovering end product by filtration. No. 427,627. American Cyanamid Co. (Geo. H. Foster, H. P. Callahan)

Geochemical method for petroleum investigation involving subterranean soil sampling and appraising sulphate content of same. No. 429,640. Eugene McDermott.

Vat color putty suitable for planographic printing composed of vat dyestuff, reducing agent, alkali, bentonite gel, and carbohydrate gum, said composition being hard at room temperature, thermoplastic, and having long softening range. No. 429,649. American Cyanamid Co. (R. H. Kienle, A. A. Amick, C. C. Kerns)

Method of preparation of methyl alpha, beta-bis(diamino s-triazinyl thio) propionate. No. 429,665. Canadian General Electric Co. Ltd. (G. F. D'Alelio, J. W. Underwood)

Preparation of a methyl alpha, beta-bis (diamino pyrimidyl thio) propionate. No. 429,666. Canadian General Electric Co. Ltd. (G. F. D'Alelio, J. W. Underwood)

Production of water-soluble salt of water-insoluble cellulose glycollic acid by treating said acid with an alkali metal base in presence of water-miscible alcohol and drying below 60 Cent. No. 429,669. Canadian Industries Ltd. (A. A. Houghton, K. Luckhurst)

Elastic, electric insulating material composed of: 100 parts of tung or oiticica oil; 1 to 1½ parts anhydrous ferric chloride as polymerization catalyst; 1½ to 3 parts anhydrous diethyl ether as chloride solvent; 18 to 25 parts castor oil. No. 429,670. Canadian Westinghouse Co. Ltd. (A. L. Brown, W. B. Atkinson)

Process for making dioxan by dimerising ethylene oxide in presence of boron trifluoride. No. 429,674. Carbide and Carbon Chemicals Ltd. (W. J. Toussaint)

Washing digested sulphite pulp utilizing as the washing liquid waste sulphite liquor which has been fermented and freed from the major part of the alcohol thus formed. No. 429,709. Svenska Cellulose Aktiebolaget (Johan Astrom)

Disintegrator design comprising disc-like grinding members on rotatable shaft with clearance between discs and stationary grinding chamber wall such that ground material is propelled through the apparatus. No. 429,710. Svenska Cellulosa Aktiebolaget (Andreas Alfsen)

Press mechanism for forming screw-threaded plastic articles. No. 429,741. Wheeling Stamping Co. (A. B. McGinnis)

Reclaiming butadiene-Styrene-acrylonitrile cured rubber-like composition by cooking with coal-tar oil which contains ethyl alcohol as plasticizer. No. 429,743. Wingfoot Corp. (D. V. Moore, H. H. Thompson)

Water-pressure resistant fabrics such as tubular fire hose made from multiple cotton yarns mercerized under tension and dried under controlled tension and temperature conditions. No. 429,748. The British Cotton Industry Research Association & F. Reddaway and Co. Ltd. F. T. Pierce, W. C. Gardiner)

Production of diazo compounds of the anthraquinone series by heating cyclic compounds having at least three condensed rings with ammonia and aldehydes. No. 429,755. Eric Berthold, Werner Rohland.

Granted and Published Sept. 4, 1945

Resinous composition comprising the reaction product of an aldehyde and bis(diamino s-triazinyl) thiocarbazide. No. 429,808. Canadian General Electric Co. Ltd. (G. F. D'Alelio, J. W. Underwood)

Resinous reaction product of urea, formaldehyde, and a bis (diamino pyrimidyl) carbaside. No. 429,809. Canadian General Electric Co. Ltd. (G. F. D'Alelio, J. W. Underwood)

Apparatus for grinding and polishing two angularly related surfaces of a prism. No. 429,811. Canadian Kodak Co. Ltd. E. M. Hawkins)

Electrical insulating resin comprised of polymerizable oil (tung or oiticica); anhydrous ferric chloride, tricresyl phosphate, and castor oil. No. 429,812. Canadian Westinghouse Co. Ltd. (A. L. Brown, W. B. Atkinson)

Manufacture of alkenyl benzenes by forming a mixture containing one alpha halogenated-alkyl benzenes and alpha halogenated-alkyl halogenated benzenes with one of group consisting of amines and amine salts and reacting in vapour phase. No. 429,815. Carbide and Carbon Chemicals Ltd. (Wm. M. Quattlebaum, D. M. Young)

Injection molding machine purging composition comprised of, vinyl chloride-acetate copolymer; (49.5 to 59.5 parts); plasticizer, 25 parts; mildly abrasive filler, 10—20 parts. No. 429,816. Carbide and Carbon Chemicals Ltd. (L. K. Merrill, W. R. Wheeler)

Method of manufacturing wall of tear-resistant vulcanized rubber. No. 429,819. Dominion Rubber Co. Ltd. (A. N. Iknayan)

Improvement of cellulose acetate filaments by shrinking treatment at about 60 Cent. No. 429,875. Henry Dreyfus (R. W. Moncrieff, H. Bates)

Granted and Published Sept. 11, 1945

Sizing material for textiles, including nylon, containing casein, borax, ceresin wax, mineral oil, soap-forming fatty acid, anti-static compound, antiseptic and water. No. 429,887. Walter Garner, F. G. Holroyd, R. Gill, G. Langley)

Log peeling machine design. No. 429,897. David Lankinen.

Increasing the bursting strength of regenerated cellulose textile fibre by treatment with urea-formaldehyde resin and octadecyl oxymethyl pyridimium chloride, in presence of ammonium acetate, drying, and baking. No. 429,812. Wm. H. Macartney.

Crucible furnace for the manufacture of glass thread or glass silk. No. 429,917. Felix Neumann.

Apparatus for effecting evaporation of heat sensitive liquids, in bulk, by means of infra red radiations. No. 429,924. James Arthur Reavell.

Viscosity regulator design. No. 429,933. A-B Aerotransport (Bo Nilsson Hoffstrom)

Liquid rosin flux for soldering can seams having improved wetting and solder disseminating properties, composed of rosin dissolved in petroleum naphtha as carrying vehicle. No. 429,944. American Can Co. (F. J. Dashner)

Improved gnomonic projector for reproducing diffraction spots of an X-ray diffraction photograph. No. 429,946. American Cyanamid Co. (D. McLachlan Jr.)

Device for determining stresses in wire ropes. No. 429,963. British Ropes Ltd. (H. Hitchen)

Removal of excess oxides from calcium tungstate phosphors by firing at 1000 Cent. with silica or boric oxide. No. 429,973. Canadian General Electric Co. Ltd. (H. Robert Schoenfeldt)

Resinous reaction product of formaldehyde and (4,6-diamino pyrimidyl-2 thio methyl) para-chloroxenyl ketone. No. 429,974. Canadian General Electric Co. Ltd. (G. F. D'Alelio, J. W. Underwood)

Manufacture of a tri-(carboalkoxyanilino) s-triazine by reaction of melamine and an alkyl benzoate. No. 429,975. Canadian General Electric Co. Ltd. (G. F. D'Alelio, J. W. Underwood)

Apparatus for measuring volume of liquid, out of contact with air, e.g., molten phosphorous. No. 429,984. Courtaulds Ltd. (E. Hodson, R. R. Soutter)

Ethyl cellulose composition, capable of depositing solvent-resistant, flexible films, containing 65-90 parts of medium ethoxy ethyl cellulose and 35-10 parts of an organo-soluble, heat-convertible, toluene sulphonamide-formaldehyde resin. No. 429,990. The Dow Chemical Co. (T. A. Kauppi)

Manufacture of selenium element by compressing selenium powder against a base plate at temperature higher than selenium. No. 429,995. Federal Telephone and Radio Corp. (A. J. Miller, I. R. Taylor)

Moldable material prepared from dried quebracho wood, paraformaldehyde as condensing agent, and glycerine and methyl lactate as plasticizers. No. 429,997. Forestal Land, Timber and Railways Co. Ltd. (E. H. W. Rottsieper)

Water-resistant moldable resin composed of dried quebracho, formaldehyde, and phenol. No. 429,998. Forestal Land, Timber and Railways Co. Ltd. (E. H. W. Rottsieper)

Aeration process for the manufacture of cellular rubber. No. 430,007. Jiewood Ltd. (J. L. Menzies)

Solder consisting of 0.25 to 2 per cent tin; 1.5 to 3.0 per cent silver; balance lead. No. 430,018. Nassau Smelting and Refining Co. Inc. (L. S. Deitz, Jr.)

Stable, fire-extinguishing foam-producing composition, containing acid and basic foam-forming reagents and water-soluble stabilizer in form of proteinaceous soybean product. No. 430,019. National Foam Systems Inc. (G. G. Urquhart)

Apparatus for heating thermoplastic materials for molding. No. 430,025. Plastics Equipment Ltd. (A. A. Burry)

Process and apparatus for separation and purification of materials by chromatographic adsorption, particularly adaptable to penicillin purification. No. 430,037. Therapeutic Research Corp. of Great Britain Ltd. (I. M. Heilbron, A. H. Cook, J. R. Catch)

Production of new azo dye by esterifying to an acid ester of sulfuric acid the dye benzene-azo-1(p-sulphato -alkoxy-phenyl)-3-methyl-5- pyrazolone. No. 430,054. Henry Dreyfus (G. H. Ellis, H. C. Olpin)

Preparation of saturated and unsaturated perganone compounds. No. 430,060. (Arthur Serini, Adolf Butenandt)

Catalytic, hydrogen-reduction, of keto-group -containing unsaturated germinal gland hormones to corresponding unsaturated hydroxy compounds. No. 430,061. Lothar Strassberger, Erwin Schwenk.

Production of ketones of steroids and their enol derivatives by subjecting ketones of steroids polyhalogenated in the ring system to the action of agents capable of splitting of the halogen hydride. No. 430,062. Hans Herloff Inhoffen, Adolf Butenandt, Erwin Schwenk.

Manufacture of unsaturated compounds of the cyclopentanopolyhydrophenanthrene series. No. 430,063. H. H. Inhoffen.

Process for preparation of carbonyl compounds of the cyclopentano polyhydrophenanthrene series. No. 430,064. Hans Dannenbaum, W. Hohlweg, H. H. Inhoffen.

Conversion of 17-cis-alcohols of the cyclopentanopolyhydrophenanthrene series into corresponding trans-alcohols. No. 430,065. Willy Logemann, Heinrich Koester.

Method of manufacturing unsaturated ketones of the cyclopentanopolyhydrophenanthrene series. No. 430,066. Hans-Herloff Inhoffen, W. Hohlweg, W. Logemann.

Chromable dyestuff prepared by melting at 120-130 Cent. a N-substituted meta-amino- phenol with 5-hydroxybenzenel,2,4-tricarboxylic anhydride to yield an ortho-benzoyl-benoic acid. No. 430,067. W. Eckert, K. Schilling.

Manufacture of carboxylic acids of the cyclopentano polyhydro phenanthrene series by abstracting water from cyanhydrins. No. 430,068. A. Butenandt, H. Dannenbaum, J. Schmidt-Thome.

Granted and Published Sept. 18, 1945

Combination of inclined foaming trays to permit controlled-foaming of blast furnace slag. No. 430,072. John C. K. Stuart, A. H. Vanderburgh.

Dyestuffs containing both a hydroxyalkyl group and a hydroxyalkyl radicle esterified with an organic acid radicle. No. 430,081. Henry Dreyfus.

Water-soluble dye, prepared by subjecting an azo dye obtainable by coupling a diazobenzene with a para- coupling aminobenzene, to the action of a sulphite—e.g. N-(sulphopropyl) aminobenzene. No. 430,032. Henry Dreyfus.

Plastic substance for application to floors or walls, composed of; 40 gals. silica flour; 13 gals. wood flour; 10 gals. alkyd resin; 9 gals petroleum spirit; and lead, cobalt, and zinc driers. No. 430,099. Richard Storrar.

Acid-curing, thermo-setting resinous reaction product of urea, formaldehyde, and 4,6-diamino pyrimidyl-2 bromo carbonethoxy-ethyl sulphide. No. 430,125. Canadian General Electric Co. Ltd. (G. F. D'Alelio, J. W. Underwood)

Mass spectrometer for continuous analysis of gaseous mixtures. No. 430,141. Canadian Westinghouse Co. Ltd. (J. A. Hipple Jr.)

Composition resistant to heat discolouration comprised of halogen-containing vinyl resin intimately combined with an organo-metallic tin salt of an alpha, beta-olefinic carboxylic acid. No. 430,149. Carbide and Carbon Chemicals Ltd. (W. M. Quattlebaum Jr., Chas. A. Noffsinger)

Reagent for testing for acetone by spot coloration consisting of powdered anhydrous soluble nitroprusside, anhydrous sodium carbonate, and anhydrous ammonium sulphate. No. 430,154. Denver Chemical Manufacturing Co. (Alex Galat)

Capsule making apparatus. No. 430,160. Gelatin Products Corp. (C. E. Mabbs)

Preparation of uniformly colored bright pink insecticidal arsenate of lead by reacting finely divided lead oxide, suspended in water, with arsenic acid. No. 430,173. Niagara Sprayer and Chemical Co. Inc. (J. F. Les Veaux)

Manufacture of water-soluble anthraquinone dyestuffs by sulphonation. No. 430,182. Sandoz A. G. (Albin Peter)

Process for preparation of new acylamines of the anthraquinone series. No. 430,183. Sandoz A. G. (Albin Peter)

Use of fractional percentage of nordihydroguaiaretic acid as an anti-oxidant, and rancidity inhibitor, in lard etc. No. 430,198. Regents of the University of Minnesota (W. M. Lauer)

Production of phenolic mono-abo dye by coupling diazotized p-amino-acetanilide with p-hydroxy-diphenyl. No. 430,201. Henry Dreyfus (H. C. Olpin)

High-frequency ferro-magnetic core composed of pressure-formed body of iron and silicon powder, bonded by thermo-setting insulating resin. No. 430,205. Ferrocart Corp. of America (Hans Vogt, Kurt Kaschke)

September 25, 1945

Pat. 2,298,323. **Thermostatic Control Device.** Patented Oct. 13, 1942. For furnaces, oil burners, or the like. Requires but few structural parts including merely, in addition to customary bimetal strip and simple control circuit, a small motor or clock mechanism, a pair of cams, and in some instances, an additional set of contacts. (Owner) John N. Wheeler, 33 Montieth Avenue, Hawthorne, N. Y. Group 33—66. Reg. No. 353.

Pat. 2,183,268. **Therapeutic Preparation.** Patented Dec. 12, 1939. Calcium therapeutic agent for treating disorders caused by calcium deficiency in the body containing 10.01 parts by weight calcium gluconate and 3.8 parts by weight calcium hypophosphite in water. States compound is stable and avoids irritating effects of calcium gluconate solutions containing acid and other stabilizers foreign to the body. (Owner) Rudolph Seiden, 700 E. 63rd Terrace, Kansas City 5, Mo. Group 28—31. Reg. No. 370.

October 2, 1945

Pat. 2,381,262. **Medicament Vehicles or Emulsions.** Patented Aug. 7, 1945. True water-phase fine emulsion free from granulation and having Brownian movements for use alone, or with medicaments suspended, dispersed, or in solution therein. It is substantially free from grease so that it is dispersible with water and with watery and oily exudations and secretions. Does not deteriorate with age and quality, remains same during varying temperatures. It is non-irritating and non-drying. (Owner) Crowe Chemical Company, 6 East 10th St., Tulsa, Okla. Group 28—31. Reg. 380.

Pat. 2,317,339. **Automatic Shift Power Transmission.** Patented Apr. 20, 1943. Particularly of the character wherein expansible V-pulleys are associated with a V-belt to provide a variable drive ratio. Has automatic governing means whereby effective pitch diameter of the driving and driven pulleys are determined by current speed of a driven shaft. (Owner) Electro-Glide Co., 2224 South Boeke St., Kansas City, Kans. Group 38—31. Reg. No. 383.

(*To be continued*)

Trademarks of the Month

A Checklist of Chemical and Chemical Specialties Trademarks

416,454. King Chemical Co. Inc., Topeka, Kans.; filed July 26, 1944; for flame-repellant and wood preservative; since May 1, 1944.

416,564. Agricultural Labs. Inc., Columbus, Ohio; filed May 27, 1944; Serial No. 470,694; for insecticides; since Apr. 28, 1944.

416,594. Wyandotte Chemicals Corp., Wyandotte, Mich.; filed Apr. 6, 1945; Serial No. 481,823; for sodium silicate composition; since Aug. 31, 1926.

416,797. The American Varnish Co., Chicago, Ill.; filed Mar. 30, 1945; Serial No. 481,510; for pigmented coating for cement; since 1936.

470,866. Frank J. Sowa, as Sowa Chemical Co., N. Y.; filed June 2, 1944; for organo-silicon compounds; since Mar. 31, 1944.

473,279. General Aniline & Film Corp., N. Y.; filed Aug. .15, 1944; for chemicals in photographic processes; since June 1944.

474,557. Vita-Var Corp., Newark, N. J.; filed Sept. 23, 1944; for waterproofing for wood; since Aug. 10, 1944.

475,425. Herbert J. Heribert, N. Y.; filed Oct. 18, 1944; for adhesive cement; since Sept. 1, 1944.

475,557. The Diversey Corp., Chicago, Ill.; filed Oct. 21, 1944; for varnish or shellac; since Oct. 9, 1944.

475,584. Edward C. Palmer, as Garden Products Co., St. Louis, Mo.; filed Oct. 21, 1944; for insecticide; since Apr. 15, 1927.

478,174. John M. Cain, Hartford, Conn., and West Palm Beach, Fla.; filed Jan. 3, 1945; for rendering fabrics repellent to water, brine, stains, and moths; since Dec. 26, 1944.

479,053. Standard Chemical Co., Natick, Mass.; filed Jan. 26, 1945; to remove soot and other fuel residue on fire surfaces; since Oct. 1, 1943.

479,293. Mac-O-Lac Paint & Varnish Works, Detroit, Mich.; filed Feb. 1, 1945; for ready-mixed paints; since Apr. 1, 1927.

479,623. Hercules Powder Co., Wilmington, Del.; filed Feb. 9, 1945; for resin to render soil non-absorbent of moisture; since May 22, 1944.

479,770. C-Z Chemical Co., Beloit, Wis.; filed Feb. 14, 1945; for spray oil and polish; since Feb. 20, 1941.

480,200. L. Sonneborn Sons, Inc., N. Y.; filed Feb. 24, 1945; for floor oil; since 1943.

480,610. Oakes & Co., also as Tru-Test, Chicago, Ill.; filed Mar. 7, 1945; for lubricating oils and greases; since Sept. 15, 1944.

480,611. Oakes & Co., also as Tru-Test, Chicago, Ill.; filed Mar. 7, 1945; for ready-mixed paints; since Sept. 15, 1944.

480,747. The Duriron Co. Inc., Dayton, Ohio; filed Mar. 10, 1945; for laboratory equipment for handling corrosive liquids; since January 1945.

481,121. Nuodex Products Co. Inc., Elizabeth, N. J.; filed Mar. 20, 1945; for wetting and dispersing agents; since December 1944.

481,377. Phelan-Faust Paint Mfg. Co., St. Louis, Mo.; filed Mar. 27, 1945; for adhesive cement; since Sept. 8, 1943.

481,440. The Sherwin-Williams Co., Cleveland, Ohio; filed Mar. 28, 1945; for paints; since Mar. 28, 1945; for paints; since Mar. 6, 1945.

481,509. The American Varnish Co., Chicago, Ill.; filed Mar. 30, 1945; for concentrated synthetic wood finish; since 1934.

481,818. Wyandotte Chemicals Corp., Wyandotte, Mich.; filed Apr. 6, 1945; for caustic soda composition for industrial bottle washing machines; since June 12, 1941.

481,819. Wyandotte Chemicals Corp., Washdotte, Mich.; filed Apr. 6, 1945; for caustic soda composition; since Jan. 26, 1940.

482,323. Goldsmith Bros., N. Y.; filed Apr. 19, 1945; for motor lubricating oil; since 1939.

482,470. Detroit Graphite Co., Detroit, Mich.; filed Apr. 23, 1945; for metal protective paints; since Dec. 29, 1924.

482,507. Selectronic Dispersions, Inc., Montclair, N. J.; filed Apr. 23, 1945; for plastic compounds; since Apr. 11, 1945.

482,697. Packaging Industries Ltd., Montclair, N. J.; filed Apr. 27, 1945; for adhesive cement; since Apr. 20, 1945.

482,911. Charles E. Wuerpel, New Rochelle, N. Y.; filed May 2, 1945; for powdered admixture for concrete; since Nov. 21, 1944.

482,992. Howards & Sons Ltd., Ilford, Essex, England; filed May 4, 1945; for plasticisers for cellulose esters; since Jan. 6, 1936.

483,121. Spencer-Adams Paint Co., Atlanta, Ga.; filed May 8, 1945; for paint enamels; since Apr. 18, 1945.

483,169. The Cowles Detergent Co., Cleveland, Ohio; filed May 10, 1945; for water soluble alkali silicate for degreasing; since Feb. 7, 1945.

483,193. Arthur Tiedmann, Kimberly, Wis.; filed May 10, 1945; for paint-like coating; since May 3, 1945.

483,304. Cordo Chemical Corp., Norwalk, Conn.; filed May 14, 1945; for paint; since Apr. 20, 1945.

483,756. Alfred Aufhauser, as Industrial Raw Materials Co., N. Y.; filed May 25, 1945; for wax composition; since May 10, 1945.

483,778. Minnesota Mining & Mfg. Co., St. Paul, Minn.; filed May 25, 1945; for polish; since Mar. 14, 1945.

483,780. Niagara Alkali Co., Niagara Falls, N. Y.; filed May 25, 1945; for tetrachloro phthalic anhydride; since Sept. 13, 1944.

484,004. Abbott Labs., North Chicago, Ill.; filed May 31, 1945; for chemotherapeutic agents; since May 9, 1945.

484,054. Leo Mann, Boston, Mass.; filed June 1, 1945; for composition of essential oils to be used as air purifier; since April 1941.

484,178. Penn. Industrial Chemical Corp., Clairton, Pa.; filed June 5, 1945; for polymers of styrene; since July 20, 1944.

484,342. Geigy Co. Inc., N. Y.; filed June 9, 1945; for dispersing and flocculating solids in anaqueous medium; since Jan. 15, 1945.

484,614. Harry T. Campbell Sons' Corp., Towson, Md.; filed June 16, 1945; for mined calcium stone; since Feb. 21, 1936.

484,793. The Mearl Corp., N. Y.; filed June 20, 1945; for hydrolyzed protein for producing fire extinguishing mechanical foam; since Sept. 17, 1944.

484,967. Oakite Products, Inc., N. Y.; filed June 23, 1945; for soluble oils intended for industrial plants; since June 1938.

Trademarks reproduced and described include those appearing in Official Gazette of U. S. Patent Office, Sept. 4 to Sept. 25.



416,454

NO-PEST
416,564

Wyandotte
METAL CLEANER
"X"
416,594

AMERICAN VARNISH CO.
LIQUID CEMENT
416,797

SIL-O-SIL
470,866

COLORLINE
473,279

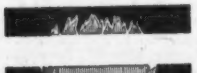
SURFA-TONE
474,557

LUPLEX
475,425

PLYOGYM
475,557

Plantgard
GARDEN SPRAY
475,584

FABRIC-MAGIC
478,174


479,053

MAC-O-LAC
479,293

STABINOL
479,623

DUST TREAT
479,770

DUST-BAN
480,200

VAL-KEEN
480,610
480,611

DURCO
480,747

NUOMIX
481,121

CEMENTSPAR
481,377

NEOPHANE
481,440

CELLO FILM
481,509

No. 91
FLAKE ALKALI
481,818

721
SPECIAL
481,819

GOLDEX
482,323

SYN-GARD
482,470

SELECTRONIC
482,507

THERM-O-WELT
482,697

VINCALAL
482,911

PLASSITIL
482,992

Spenada
483,121

DRYSEQ
483,169

COPPOSHEEN
483,193

CORDO-SOL C #
483,304

PARALATRUM
483,756

SCOTCH BOY
483,778

Niathal
483,780

ABBOMYCIN
484,004

SPG
484,054

PICCOLASTIC
484,178

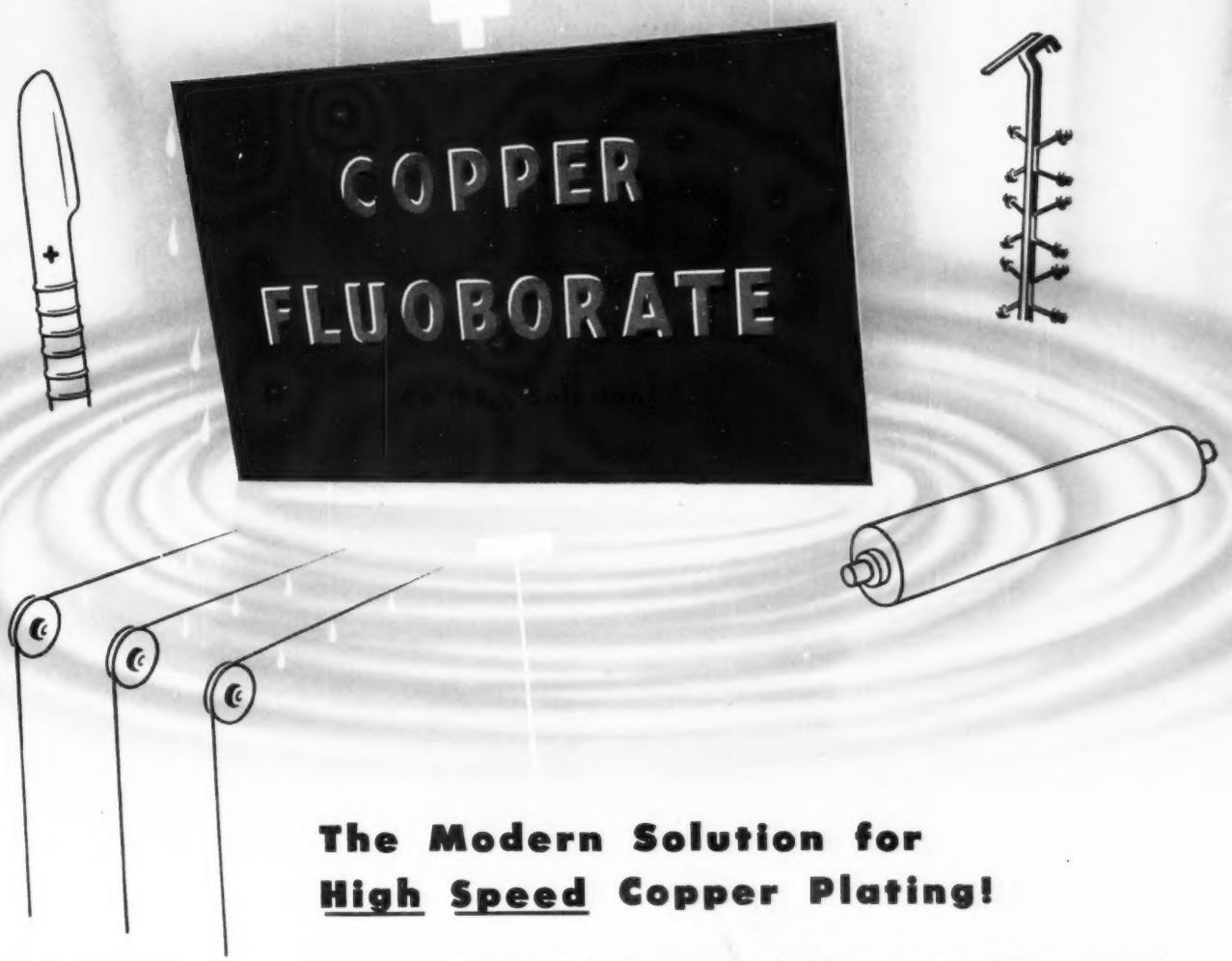
GESAFLOC
484,342

CAMELIME
484,614

MEARLFOAM
484,793

OAKITE
484,967

General Chemical Presents Another New Research Achievement...



The Modern Solution for High Speed Copper Plating!

General Chemical Fluorine Research leads again with another chemical of progress for the electroplating industry . . . Now, *Copper Fluoborate* . . . a concentrated solution that deposits copper at a higher rate than ***any other known acid bath!***

Moreover, this superior plating chemical produces semi-bright, fine grained and ductile coatings, as well as plates out heavy deposits when desired. It requires no addition agents and offers unusual simplicity of control.

Total its outstanding advantages. Consider what they can mean to you as an electrotyper, gravure printer, producer of composite copper-nickel coatings, or manufacturer of other copper-clad products that must be plated at the fastest rate consistent with quality work. Then—try General's Copper Fluoborate for your plating!

FIRST IN FLUORIDES . . . Copper Fluoborate is one of many General Chemical Metal Fluoborate Concentrate Solutions now available to Industry in commercial or experimental quantities.

For technical data . . . trial samples . . . or other helpful information on this or other products below, contact General Chemical Company Fluorine Division, 40 Rector Street, New York 6, N. Y. or the nearest General Chemical Sales and Technical Service Office below.

GENERAL CHEMICAL METAL FLUOBORATE SOLUTIONS

Cadmium Fluoborate
Chromium Fluoborate
Cobalt Fluoborate
Copper Fluoborate
Ferrous Fluoborate
Indium Fluoborate
Lead Fluoborate
Manganese Fluoborate
Mercuric Fluoborate
Nickel Fluoborate
Silver Fluoborate
Stannous (Tin) Fluoborate
Zinc Fluoborate

BASIC CHEMICALS
GENERAL CHEMICAL COMPANY
FOR AMERICAN INDUSTRY

GENERAL CHEMICAL COMPANY

40 RECTOR STREET, NEW YORK 6, N. Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) • Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver Detroit • Houston • Kansas City • Los Angeles • Minneapolis • New York Philadelphia • Pittsburgh • Providence (R. I.) • San Francisco • Seattle St. Louis • Utica (N. Y.) • Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corp., Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited
Montreal • Toronto • Vancouver



To the Country for Christmas, 1920

By 1920 the jingle of sleighbells had begun to give way to the clank of tire chains on country roads and city streets as more and more people, anxious to "get there" in winter as well as summer, kept the family car out of storage and on the go all year 'round.

Here was perhaps the greatest test that tires had ever been called upon to meet. Cold weather, icy ruts and the wear and tear of chains reduced their mileage and increased the risk of blowouts. The rubber industry met the challenge with better tire construction and the increasing use of carbon black, that magic rubber reinforcing material. For carbon black has proved a key material with which tire makers have increased wear resistance—until by 1941 mileages of 35,000 or more were taken for granted!

Witco Chemical Company, founded in 1920, early recognized the vital importance of carbon black to the future development of the rubber industry... went into its production on a large scale... and has worked constantly to improve its effectiveness through research on better production methods. Today Witco blacks are helping to lengthen the service of all types of synthetic rubber products in all climates—from tropic heat to arctic cold. They are among the vital materials that have aided in making our great synthetic rubber program a smashing success.

Today, Witco offers a complete line of carbon blacks not only for rubber compounding but for use in paints, printing inks, paper, plastics and other industries. It is an important part of Witco's increasingly broadening service to America's process industries

WITCO CHEMICAL COMPANY MANUFACTURERS AND EXPORTERS

[Formerly Wishnick-Tumpeer, Inc.]

295 MADISON AVENUE, NEW YORK 17, N. Y. • Boston • Chicago • Detroit • Cleveland • Akron • London

